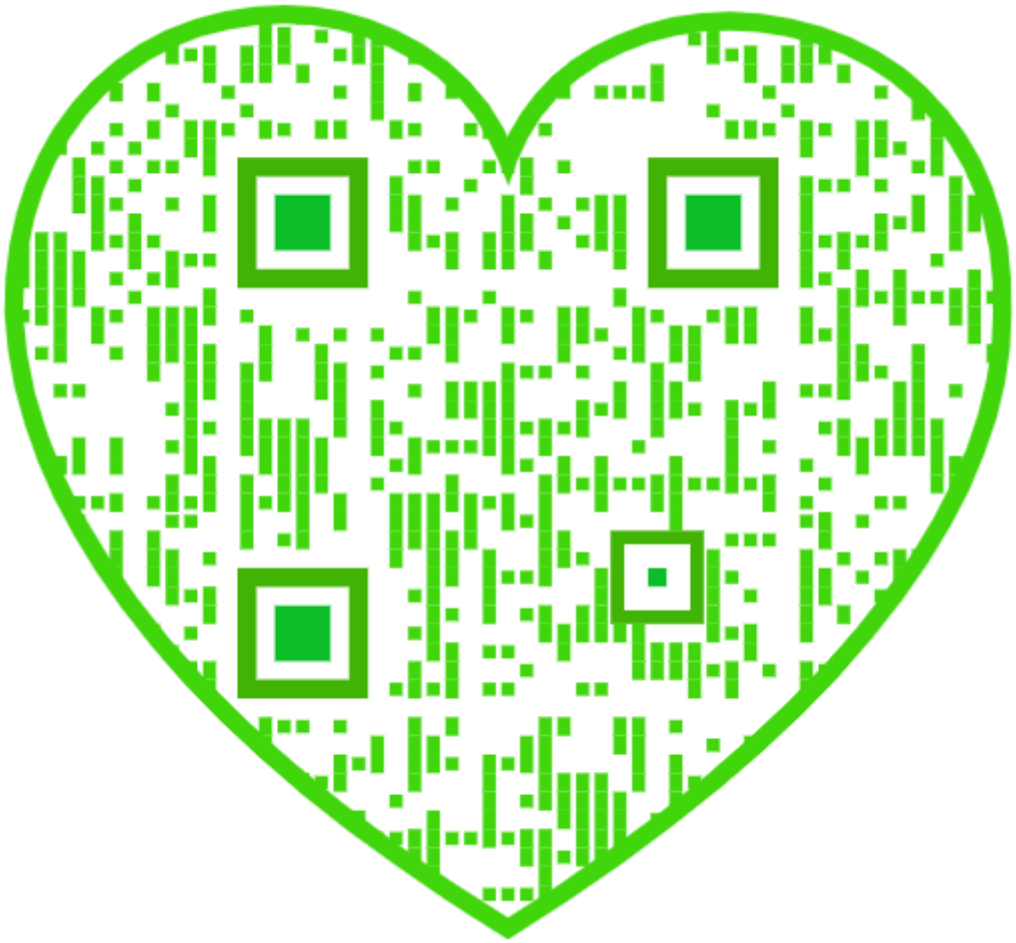
EDWARD STANIFORD ROGERS



STATE OF NEW YORK — DEPARTMENT OF AGRICULTURE
Fifteenth Annual Report — Vol. 3 — Part II

THE

GRAPES OF NEW YORK

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BY
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Report of the New York Agricultural Experiment Station for the Year 1907
II

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NEW YORK AGRICULTURAL EXPERIMENT STATION,

GENEVA, N. Y., *December* 31, 1907.

To the Honorable Board of Control of the New York Agricultural Experiment Station:

GENTLEMEN.—I have the honor to submit herewith Part II of the report of this institution for the year 1907, to be known as The Grapes of New York. It is the second in the series of fruit publications which is now being prepared under your authority.

This volume is the result of years of recorded observations by members of the Station staff, to which has been added the collection of a large amount of information from practical growers of the grape. Every effort has been made to insure completeness and accuracy of statement, and to make the work a reliable guide as to all the varieties of grapes that are likely to meet the attention of New York grape-growers. It is believed that this volume will occupy a useful place in grape literature and will be serviceable to an important industry in this State.

W. H. JORDAN,

Director.

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PREFACE

The purpose of *The Grapes of New York* is to record the state of development of American grapes. The title implies that the work is being done for a locality but in this matter New York is representative of the whole country. The contents are: Brief historical narratives of Old World and New World grapes; an account of the grape regions and of grape-growing in New York, with statistics relating to the grape, wine and grape juice industries in this State; a discussion of the species of American grapes; and the synonymy, bibliography, economic status, and full descriptions of all of the important varieties of American grapes. In the footnotes will be found brief biographical sketches of those persons who have contributed most to the evolution of the grape and to grape-growing in America and some historical and descriptive notices of certain things pertaining to the grape which do not belong in the text and yet serve to give a better understanding of it or otherwise add to the completeness of the book. Color-plates are shown of varieties which from various standpoints are considered most important.

In the brief account of the Old World grape there is little that is new. Its history is on record from the earliest times in the literature of nearly all civilized peoples. A few facts, selected here and there, have been taken to serve as an introduction to the accounts of the New World grapes. So, too, the history of the American grape has been written by others and, here, only the main facts have been set down as recorded in the score or more books dealing with this fruit. A few excursions have been made in hitherto unexplored fields. The purpose of these historical sketches is to give the reader a proper perspective of the work in hand.

The grape is probably influenced to a greater degree by soil, climate, and culture than any other fruit, and a discussion of its status cannot be complete without due consideration of the environment in which it is growing. Hence there is included as full an account of grape-growing and of the grape regions in New York as space permits. This part of the work may

serve the prospective planter somewhat in selecting soils and locations but as it is not written with this as a chief end, it falls far short of some of the standard treatises on grape culture in this respect.

Comparatively few statistics are given, only those which are necessary to show the volume of grape products and the extent of the vineyards in the State and country at the present time. The figures for the whole country are surpassed by those of no other native fruit, and only by corn and tobacco among all the domesticated native plants.

The botany of the grape has been the most perplexing problem to deal with in the preparation of this work. The variability of the grape is so great, and the variations are so often toward closely related species, that it is difficult to tell where one species ends and another begins. This, of course, has led to differences in opinions. Then, too, the several monographers have not had the same specimens to work with; men do not have the same powers of discrimination; and the arrangement of botanical groups, based upon the characters of the plants and the theory of descent with adaptive modifications, is not governed by definite rules; hence botanical divisions are arbitrary and differ with the judgments of the botanists who make them. For these reasons we have as many different arrangements of species of grapes as there are men who have worked them over.

Since this work is not written from the standpoint of the botanist but of the horticulturist, no effort has been made to revise the botany of the grape. But it has been necessary to select some arrangement of species in order to make such disposition of the cultivated varieties that their characters and relationships can best be shown. In making a choice of the several recent classifications of American grapes, three main considerations have been in mind: First, that the arrangement should separate the species in the genus freely, thus decreasing the size of the groups so that they may be more easily studied. Second, that it should show as clearly as possible the relationships of the various groups and of their development—the evolution of the grape. Third, that it be an arrangement in good standing with botanists and horticulturists. After having examined all American classifications of grapes and all recent European ones, Bailey's classification, as set forth in his monograph of the Vitaceae in *Gray's Synoptical*

Flora, in the *Evolution of our Native Fruits*, and in the *Cyclopedia of American Horticulture*, was adopted.

The Grapes of New York makes its chief contribution to the pomology of the country in the description of varieties. The authors have tried to study varieties from every point of view, not alone nor chiefly, it must be said, with regard to their cultural value; for most of the varieties pass out of cultivation and such information would be worthless within a few years at most. But, rather, the effort has been to determine what elementary or unit characters the grape possesses as shown in its botanical and horticultural groups. The Twentieth Century begins with the unanimous judgment of scientists that the characters of plants are independent entities which are thrown into various relationships with each other in individuals and groups of individuals. This conception of unit characters lies at the foundation of plant improvement. We are but beginning the breeding of American grapes and it has seemed to the writer that the most important part of this undertaking is to discover and record as far as possible these unit characters of grapes, thereby aiding to furnish a foundation for grape-breeding. The great problem of plant-breeding in the future will be to correlate the characters known to exist in the plant being improved; we must know what these are before we begin to combine and rearrange them.

The varieties are arranged alphabetically throughout, though, were present knowledge exact enough, it would be far better to arrange them in natural groups. Such a classification is probably possible, but it remains for future workers to search out the relationships which the structures and qualities of plant and fruit indicate and to group the varieties naturally rather than alphabetically. Wherever possible in this work, however, the relationships of varieties have been indicated as fully as knowledge permits, thus making a start toward natural classification.

In the lists of synonyms given, all known names for a variety used in the American literature of the grape are brought together. These lists ought to be useful in correcting and simplifying the nomenclature of the grape which, like that of all of our fruits, is in more or less confusion. It is hoped that the work may become a standard guide, for some time to come at least, in the identification of varieties and in nomenclature, and that it will aid originators of new grapes and nurserymen in avoiding the dupli-

cation of names. In matters pertaining to nomenclature, the revised rules of the American Pomological Society have been followed, though in a few cases it has not seemed best to make changes which their strict observance would have required. The necessity for rules is shown by an examination of the synonymy of any considerable number of varieties as given in the body of the work. In some cases varieties have from ten to twenty names and very often different varieties are found to have the same name. This chaotic condition is confusing and burdensome and it has been one of the aims in the preparation of the work to set straight the horticultural nomenclature of the grape, thus lessening the difficulty and uncertainty of identification and making the comparative study of varieties easier.

It would be impossible, and not worth while, could it be done, to give all of the references to be found in even the standard grape literature. Only such have been given as have been found useful by the writers or as would serve to give the future student of the literature of grape varieties a working basis.

A brief history of each variety is given so far as it can be determined by correspondence and from grape literature. In these historical sketches the originator and his method of work justly receive most attention. The place, date and circumstances of origin, the distributor, and the present distribution of the variety, are given when known and are of about equal importance in the plan of this work.

The technical descriptions of grapes are all first-hand and made by members of the present horticultural department of the Station from living plants. But rarely has it been necessary to go to books for any one character of a vine or fruit though the leading authorities have been consulted in the final writing of the descriptions and modifications made when the weight of authority has been against the records of the Station. Some differences must be expected between descriptions of varieties made in different years, different localities and by different men. For most part the varieties described are growing on the Station grounds but every opportunity has been taken to study several specimens of each variety and especially of the fruit. In many instances the descriptions have been submitted to the originators, introducers, or to some recognized grape specialist.

A number of considerations have governed the selection of varieties for full descriptions. These are: First, the value of a variety for the commercial or amateur grower for any part of the State as determined by the records of this Station, by reports collected from over 2000 grape-growers, and by published information from whatever source. Second, the probable value of new sorts as determined by their behavior elsewhere. Third, to show combinations of species or varieties, or new characters hitherto unknown in fruit or vine, or to portray the range in variation, or to suggest to the plant-breeder a course of future development. Fourth, a few sorts have been described because of their historical value — for the retrospection of the grape-grower of the present and the future. It is needless to say that many of the varieties described are worthless to the cultivator.

In all of the descriptions the effort has been to depict living plants and not things existing only in books; to give a pen picture of them that will show all of their characters. An attempt has been made, too, to show the breeding of the plants, their relationships; to show what combination of characters exist in the different groups of varieties; to designate, as far as possible, the plastic types; in short to show grapes as variable, plastic plants capable of further improvement and not as unchangeable organisms restricted to definite forms.

It is hoped that the color-plates will be of great service in illustrating the text. All possible means at the command of photography and color printing have been used to make them exact reproductions. The specimens, too, have been selected with the utmost care. In preparing these illustrations the thought has been that technical descriptions, however simply written, are not easily understood, and that the readiest means of comparison and identification for the average reader would be found in the color-plates. Through these and the accompanying descriptions it is hoped that all who desire may acquire, with time and patience, a knowledge of the botanical characters of grapes and thereby an understanding of the technical descriptions. The plates have been made under the personal supervision of the writer.

With all care possible, due allowance must yet be made for the failure to reproduce nature exactly in the color-plates. The plates are several removes from the fruit. Four negatives were taken of each subject with

a color filter between the lens and the fruit. A copper plate was made from each negative, one for each of the four colors, red, yellow, black and blue. The color-plates in the book are composed of these four colors, combined by the camera, the artist, the horticulturist and the printer. With all of these agencies between the fruit and the color-plate they could not be exact reproductions. It must ever be in mind, too, that grapes grown in different localities vary more or less in all characters and that the reproduction can represent the fruit from but one locality. The specimens from which the plates were made came for most part from the Station grounds. The illustrations are life size and as far as possible from average specimens.

Acknowledgments are due to Professor Spencer A. Beach of Ames, Iowa, who, while in charge of this Department previous to August, 1905, had begun the collection and organization of information on grapes, much of which has been used in this volume; to Mr. F. H. Hall, who as Station Editor has read the manuscripts and proof sheets and given much valuable assistance in organizing the information presented; to Zeese-Wilkinson & Co., through whose zeal and painstaking skill the color-plates, which add so much to the beauty and value of the book, have been made; and lastly to the grape-growers of New York who have given information whenever called upon and who have generously furnished grapes for descriptive and photographic work.

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Horticulturist, New York Agricultural Experiment Station.

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THE GRAPES OF NEW YORK

CHAPTER I

THE OLD WORLD GRAPE

A single species of the grape is cultivated in the Old World. This is *Vitis vinifera*, the grape of ancient and modern agriculture, the vine of the allegories of sacred record and of the myths, fables and poetry of the Old World countries. It is the vine which Adam and Eve cared for:—

"* * * they led the vine
To wed his elm; * * *." *Milton.*

It is the vine which Noah planted after the deluge; the vine of Judah and Israel, and of the promised land. Dionysus of the Greeks, Bacchus of the Romans, found the grape and devoted his life to spreading it; for which he was raised to the rank of a deity — god of vines and vintages. The history of this grape is as old as that of mankind. It has followed civilized man from place to place throughout the world and is one of the chief cultivated plants of temperate climates. This fruit of sacred and profane literature has so impressed itself upon the human mind that when we think or speak of the grape, or vine, it is the Old World species, the vine of antiquity, that presents itself.

The history of the Old World grape goes back to prehistoric times. Seeds of the grape are found in the remains of the Swiss lake dwellings of the Bronze Period and entombed with the mummies of Egypt. Its printed history is as old as that of man and is interwritten with it. According to the botanists, the probable habitat of *Vitis vinifera* is the region about the Caspian Sea.[1] From here it was carried eastward into Asia and westward into Europe and Africa. It is probable that the Phoenicians, the earliest navigators, tradesmen and colonizers on the Mediterranean, carried it to the countries bordering on this sea. Grape culture was developed in this

[1] De Candolle, Alphonse. *Origin of Cultivated Plants:* 191. 1882.

region a thousand years before Christ, for Hesiod, who wrote at this time, gave directions for the care of the vine which need to be changed but little for present practice in Europe. Pliny, writing a thousand years after, quotes Hesiod as an authority on vine culture. Vergil and Pliny, during Christ's time, gave specific directions for the care of the vine. Vergil describes fifteen varieties while Pliny gives even fuller descriptions of ninety-one varieties and distinguishes fifty kinds of wine.

The authentic written history of the grape and of its culture really begins with Vergil. Many other writers, Greeks and Romans, had discussed the vine, but none so fully nor so well as Vergil in his Georgics, of which the parts having to do with the vine may still be read with profit by the grape-grower; as, for example, the following[1] in which he tells how to cultivate and train:—

"Be mindful, when thou hast entomb'd the shoot,
With store of earth around to feed the root;
With iron teeth of rakes and prongs, to move
The crusted earth, and loosen it above.
Then exercise thy sturdy steers to plow
Between thy vines, and teach the feeble row
To mount on reeds, and wands, and, upward led,
On ashen poles to raise their forky head,
On these new crutches let them learn to walk,
'Till, swerving upwards with a stronger stalk,
They brave the winds, and, clinging to their guide,
On tops of elms at length triumphant ride."[2]

His directions for pruning are equally fitting for present practice:—

"But in their tender nonage, while they spread
Their springing leaves, and lift their infant head,
And upward while they shoot in open air,
Indulge their childhood, and the nurslings spare;

---

[1] Translation of Dryden.

[2] Perhaps the most marked distinguishing feature between ancient and modern grape-growing is the training of vines to trees as indicated in the above verse. Pliny says of this practice: "In Campania they attach the vine to the poplar; embracing the tree to which it is thus wedded, the vine grasps the branches with its amorous arms, and as it climbs, holds on with its knotted trunk till it has reached the very summit; the height being sometimes so stupendous that the vintager when hired, is wont to stipulate for his funeral pile and grave at the owner's expense."

Nor exercise thy rage on new-born life;
But let thy hand supply the pruning knife,
And crop luxuriant stragglers, nor be loth
To strip the branches of their leafy growth.
But when the rooted vines with steady hold
Can clasp their elms, then, husbandman, be bold
To lop the disobedient boughs, that strayed
Beyond their ranks; let crooked steel invade
The lawless troops, which discipline disclaim,
And their surperfluous growth with rigor tame."

The history of the development of the vine from Vergil's time through the early centuries of the Christian Era and of the Middle Ages to our own day, is largely the history of agriculture in the southern European countries; for the vine during this period has been the chief cultivated plant of the Greek and Latin nations. This history should furnish most instructive lessons in grape-growing and in grape-breeding.

But interesting and profitable as a detailed account of the development of the Old World grape would be, the brief outline in the few preceding paragraphs must suffice for this work. The reader who desires further information may find it in the agricultural literature in many languages and dating back two thousand years.

What are the characters of the European grape and how does it differ from the native grapes of America? The Old World grape is grown for wine; the American grapes for the table. The differences in the fruit of the vines of the two continents are largely the differences necessary for the two distinct purposes for which they are grown. The varieties of *Vitis vinifera* have a higher sugar and solid content than do those of the American species. Because of this richness in sugar they not only make better wine but keep much longer and can be made into raisins. The American grapes do not keep well and do not make good raisins. Taken as a whole the European varieties are better flavored, possessing a more delicate and a richer vinous flavor, a more agreeable aroma, and they lack the acidity and somewhat obnoxious foxy odor and taste of many American varieties. It is true that there is a disagreeable astringency in some Vinifera grapes and that many varieties are without character of flavor, yet, all and all, the species produces by far the better flavored fruit. On the other hand,

American table grapes are more refreshing; one does not tire of them so quickly as they do not cloy the appetite as do the richer grapes; and the unfermented juice makes a much more pleasant drink. The characteristic flavor and aroma of the varieties of *Vitis labrusca*, our most commonly cultivated native species, are often described by the terms "foxy"[1] or "musky." If not too pronounced this foxiness is often very agreeable though, as with the flavor in many exotic fruits, the liking for it must often be acquired, and of course may never be acquired; yet the universal condemnation of this taste by the French and some other Europeans is sheer prejudice. The bunches and berries of the European grape are larger, more attractive in appearance, and are borne in greater quantity, vine for vine or acre for acre. The pulp and skin of the berries of *Vitis vinifera* are less objectionable than those of any native species and the pulp separates more easily from the seeds. The berries do not shell from the stem nearly so quickly, hence the bunches ship better.

In comparing the vines, those of the Old World grape are more compact in habit, make a shorter and stouter annual growth, therefore require less pruning and training. The roots are fleshier, and more fibrous. The species, taken as a whole, is adapted to far more kinds of soil, and to much greater differences in environment, and is more easily propagated from cuttings, than most of the species of American grapes. The cultivated forms of the wild vines of this country have few points of superiority over their

[1] Bailey gives the following interpretation of the word "fox" and its derivatives as applied to grapes: "The term fox-grape was evidently applied to various kinds of native grapes in the early days, although it is now restricted to the *Vitis labrusca* of the Atlantic slope. Several explanations have been given of the origin of the name fox-grape, some supposing that it came from a belief that foxes eat the grapes, others that the odor of the grape suggests that of the fox — an opinion to which Beverly subscribed nearly two centuries ago — and still others thinking that it was suggested by some resemblance of the leaves to a fox's track. William Bartram, writing at the beginning of this century, in the Medical Repository, is pronounced in his convictions: 'The strong, rancid smell of its ripe fruit, very like the effluvia arising from the body of the fox, gave rise to the specific name of this vine, and not, as many have imagined, from its being the favourite food of the animal; for the fox (at least the American species) seldom eats grapes or other fruit if he can get animal food.' I am inclined to suggest, however, that the name may have originated from the lively foxing or intoxicating qualities of the poor wine which was made from the wild grapes. At the present day we speak of 'foxiness' when we wish to recall the musk-like flavor of the wild *Vitis labrusca;* but this use of the term is of later origin, and was suggested by the name of the grape." Bailey, L. H. *Evolution of Our Native Fruits:* 5. 1898.

relative from the eastern hemisphere, but these few are such as to make them now and probably ever the only grapes possible to cultivate in America in the commercial vineyards east of the Rocky Mountains. Indeed, but for the fortunate discovery that the vine of *Vitis vinifera* could be grown on the roots of any one of several species of the American grapes, the vineyards of the Old World grape would have been almost wholly destroyed within the last half century because of one of its weaknesses. This destructive agent is the phylloxera,[1] a tiny plant louse working on the leaf and root of the grape, which in a few years wholly destroys the European vine but does comparatively little harm to most of the American vines. Three other pests are much more harmful in the Old World vineyards than to the vines of the New World; these are black-rot (*Guignardia bidwellii* (Ell.) V. & R.), downy mildew (*Plasmopara viticola* (B. & C.) Berl. & De Toni), and powdery mildew (*Uncinula necator* (Schw.) Burr.).

The susceptibility of the Old World grape to these parasites debars it from cultivation in eastern America and so effectually that there is but little hope of any pure-bred variety of it ever being grown in this region. American viticulture must, therefore, depend upon the native species for its varieties, though it may be hoped that by combining the good qualities

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[1] The phylloxera (*Phylloxera vastatrix* Planch.) has four forms: the leaf-gall form, the root form, the winged form, and the sexual form. Individual leaf insects produce from 500 to 600 eggs, the root insect about 100, the winged insect from 3 to 8, and the sexual insect but 1. The last is laid in the fall on old wood; the following spring a louse hatches from it and at once goes to the upper surface of a leaf and inserts its beak. The irritation thus produced causes a gall to form on the lower side of the leaf. In fifteen days the louse becomes a full-grown wingless female and proceeds to fill the gall with eggs after which it dies. In about a week females hatch from the eggs and migrate to form new colonies. Several generations of females occur in a summer. At the approach of winter the lice go into the ground where they remain dormant until spring when they attack the roots forming galls analogous to those on the leaves and passing through a series of generations similar to those above ground. In the fall of the second year some of the root forms give rise to winged females which fly to neighboring vines. These lay eggs in groups of two or four on the wood of the grape. The eggs are of two sizes; from the smaller size, males hatch in nine or ten days; from the larger, females. In the sexual stage no food is taken and the insects quickly pair. The female produces an egg which fills its entire body and after three or four days lays it, this being the winter egg, the beginning of the cycle.

There are no remedies worthy the name and the only efficient preventive is to graft susceptible varieties on resistant stocks. Species are resistant about in the order named: *V. rotundifolia*, *V. riparia*, *V. rupestris*, *V. cordifolia*, *V. berlandieri*, *V. cinerea*, *V. aestivalis*, *V. candicans*, *V. labrusca*, *V. vinifera*.

of the foreign grape with those of one or several of the species of this country, or by combining and rearranging the best characters of the native species, we may in time secure varieties equal in all respects to those of the Old World. The comparative resistance of the American species to the phylloxera, the mildews, and black-rot has been due to natural selection in the contest that has been waged for untold ages between host and parasite. The fact that the native species have been able to survive and thrive is a guarantee of the permanence of the resistance thus acquired.

We have said that the Old World grape is debarred from cultivation in eastern America. It is worth while considering how thorough the attempts to grow it in this region have been and to give a more exact account of the failures and their causes, for there are yet those who are attempting its culture with the hope that we may sometime grow some offshoot of *Vitis vinifera* in the region under consideration.

It is probable that the first European grapes planted in what is now American soil, were grown by the Spanish *padres* at the old missions in New Mexico, Arizona and California. Early accounts of some of these missions speak of grapes which must have been planted before settlements were made in eastern America. We need take no further account of these vineyards except to say that in this region the European grape has always been grown successfully, and that under the skilled hands of the mission fathers, ever notable vineyardists and wine-makers, these early plantings must have succeeded.

The English were the first to plant the Old World grape in the territory in which this species fails because of the attacks of native parasites. Lord Delaware seems to have been the original promoter of grape-growing in the New World. In 1616 he wrote to the London Company urging the culture of the grape as a possible source of revenue for the new colony.[1] His letter seems to have been convincing, for it is on record that the Company in 1619 sent a number of French vine-dressers and a collection of the best

[1] Delaware wrote as follows: " In every boske and hedge, and not farr from our pallisade gates we have thousands of goodly vines running along and leaving to every tree, which yealds a plentiful grape in their kinde. Let me appeale, then, to knowledge if these naturall vines were planted, dressed and ordered by skilfull vinearoons, whether we might not make a perfect grape and fruitfull vintage in short time?" Delaware's Relation. *Brown's Genesis of the United States.* 1611.

varieties of the grapes of France to Virginia. The Colonial Assembly showed quite as much solicitude in encouraging the cultivation of the vine as did the Company in London. The year of the importation of vines and vine-dressers, 1619, the Assembly passed an act compelling every householder to plant ten cuttings and to protect them from injury and stated that the landowners were expected to acquire the art of dressing a vineyard, either through instruction or by observation. The Company, to increase the interest in vine-growing, showed marked favors to all who undertook it with zealousness; promises of servants, the most valuable gifts that could be made to the colonists, were frequent. Under the impulse thus given vineyards were planted containing as many as ten thousand vines.[1]

In spite of a rich soil, congenial climate, and skilled vine-dressers, nothing of importance came from the venture, some of the historians of the time attributing the failure to the massacre of 1622; others to poor management of the vines; and still others to disagreements between the English and their French vine-dressers, who, it was claimed, concealed their knowledge because they worked as slaves. It is probable that the latter explanation was fanciful but the former must have been real for we are told that the farms and outlying settlements were abandoned after the great massacre. But the colony could hardly have recovered from the ravages of the Indians before efforts to force the colonists to grow grapes were again made; for in 1623 the Assembly passed a law that for every four men in the colony a garden should be laid off a part of which was to be planted to vines.[2]

In 1639 the Assembly again tried to encourage vine-growing by legislative enactment, this time with an act giving a premium to successful grape-growers.[3] Later, about 1660, a premium of ten thousand pounds of tobacco was offered in Virginia for each " two tunne of wine " from grapes raised in the colony. Shortly after, some wine was exported to England but

[1] Discourse of the Old Company, *British State Papers*, Vol. III:40. See *Virginia Magazine of History*, Vol. I:159.

[2] Laws and Orders of Assembly, Feb. 16, 1623. *McDonald Papers*, Vol. 1:97. Va. State Library.

[3] The clause in this act reads: " That all workers upon corne and tobacco shall this spring plant five vyne plants per pol, and the next year, before the first day of March, 20 per pol, upon penaltie to forfeite one barrell of corne for every one that shall make default."

whether made from wild plants or cultivated ones does not appear. In spite of the encouragement of legislative acts, grape-growing did not flourish in Virginia.[1] The fact that tobacco was a paying crop and more easily grown than the grape may have had something to do with the failure to grow the latter. Or it may have been that the cheapness of Madeira, "a noble strong drink," as one of the Colonial historians puts it, had a depressing influence on the industry. But still more likely, the foreign plants did not thrive.

Encouragement of the home production of wine did not cease in Virginia for at least one hundred and fifty years; for in 1769 an enactment of the Assembly was passed to encourage wine-making in favor of one Andrew Estave, a Frenchman. As a result of the act of this time, land was purchased, buildings erected, and slaves and workmen with a complete outfit for wine-making were furnished Estave. The act provided that if he made within six years ten hogsheads of merchantable wine — land, houses, slaves, the whole plant was to be given to him. It is stated that this unusual subsidy is made "as a reward for so useful an improvement." Estave succeeded in making the wine but it was poor stuff and he had difficulty in getting the authorities to turn over the property which was to be his reward This was finally done by an act of the Assembly, however, the failure to make good wine being attributed by all parties to the "unfitness of the land."

An attempt was made to cultivate the European grape in Virginia early in the eighteenth century on an extensive scale. Soon after taking office as governor in 1710, Alexander Spotswood brought over a colony of

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[1] Roger Beverly, writing a century later, describes the early grape-growing in Virginia as follows: "The Year before the Massacre, *Anno* 1622, which destroyed so many good projects for Virginia; some French vignerons were sent thither to make an experiment of their vines. These people were so in love with the country, that the character they then gave of it in their letters to the company in England, was very much to its advantage, namely: 'That it far excelled their own country of *Languedoc*, The vines growing in great abundance and variety all over the land; that some of the grapes were of that unusual bigness, that they did not believe them to be grapes, until by opening them they had seen their kernels; that they had planted the cuttings of their vines at Michaelmas, and had grapes from those very cuttings, the spring following. Adding in the conclusion, that they had not heard of the like in any other country.' Neither was this out of the way, for I have made the same experiment, both of their natural vine, and of the plants sent thither from England." *Beverly's Virginia*, Second Edition: 107. 1722.

Germans from the Rhine and settled them in Spottsylvania County on the Rapidan river. The site of their village on this river is now marked by a ford, Germania Ford, a name which is a record of the settlement. That they grew grapes and made wine is certain, for the Governor's "red and white Rapidan, made by his Spottsylvania Germans" is several times mentioned in the published journals and letters of the time. But the venture did not make a deep nor lasting impress on the agriculture of the colony.[1]

Several early attempts were made in the Carolinas and Georgia to grow the Vinifera grape. It was thought, in particular, that the French Huguenots who settled in these states in large numbers toward the close of the seventeenth century would succeed in grape-growing but even these skilled vine-growers failed. Their failures are recorded by Alexander Hewitt in 1779 as follows: "European grapes have been transplanted, and several attempts made to raise wine; but so overshaded are the vines planted in the woods, and so foggy is the season of the year when they ripen, that they seldom come to maturity, but as excellent grapes have been raised in gardens where they are exposed to the sun, we are apt to believe that proper methods have not been taken for encouraging that branch of agriculture, considering its great importance in a national view." In Georgia, Abraham De Lyon, encouraged by the authorities of the colony, imported vines from Portugal and planted them at Savannah early in the eighteenth century but his attempt, though carried out on a small scale in a garden, soon failed.

In Maryland, if the records are correct, a greater degree of success was attained than in the states to the south. Lord Charles Baltimore, son of the grantee of the territory, in 1662 planted three hundred acres of land in St. Mary's to vines. It is certain that he made and sold wine in considerable quantities and the old chroniclers report that it was as good as the best Burgundy. Efforts to grow the European grape in Maryland continued until as late as 1828 when the *Maryland Society for Promoting the Culture of the Vine* was incorporated by the State Legislature.[2] The object of the Society was to "carry on experiments in the cultivation of both the European and native grapes and to collect and disseminate all

[1] Fiske, John. *Old Virginia and Her Neighbors.* Vol. II:372, 385.

[2] *American Farmer*, Baltimore, 11:35. 1829–30. *Ib.*, 12:396. 1830–31.

possible information upon this interesting subject." The organization was in existence for several years and through its exertions practically all of the native sorts were tried in or about Baltimore as well as many seedlings. Besides the achievements of the Society as a body, their Secretary reports in 1831 that, through the individual efforts of its members, there were then under cultivation near the city of Baltimore several vineyards of from three to ten acres each and a great number of smaller ones. This was several years after the introduction of the Catawba and Isabella for which grape-growers in other parts of the United States had largely given up the Vinifera sorts. Seemingly in every part of the Union the grape of the Old World was tried, not once only, but time and again before its culture could be given up.

The Swedes made some attempts at an early day to grow grapes on the Delaware. Queen Christina instructed John Printz, governor of New Sweden, to encourage the "culture of the vine" and to give the industry his personal attention. Later when New Sweden had become a part of Pennsylvania, William Penn encouraged vine-growing by importing cuttings of French and Spanish vines; and several experimental vineyards were set out in the neighborhood of Philadelphia, but all efforts to establish bearing plantations came to naught. Penn's interest in grape-growing seems to have been greatly stimulated by wine made by a friend of his from native grapes which grew about Germantown.

There are no detailed accounts of grape-growing by the Dutch of New York but the following taken from the writings of Jasper Dankers and Peter Sluyter, two Hollanders who visited New York in 1679, soon after the English took possession of New Netherland, indicates that there had been attempts to cultivate grapes.[1] "I went along the shore to Coney Island, which is separated from Long Island only by a creek, and around the point, and came inside not far from a village called *Gravesant*, and again home. We discovered on the roads several kinds of grapes still on the vines, called *speck* (pork) grapes, which are not always good, and these were not; although they were sweet in the mouth at first, they made it disagreeable and stinking. The small blue grapes are better, and their

[1] Dankers, Jasper, and Sluyter, Peter. *Journal of a Voyage to New York in* 1679–80: 130.

vines grow in good form. Although they have several times attempted to plant vineyards, and have not immediately succeeded, they, nevertheless, have not abandoned the hope of doing so by and by, for there is always some encouragement, although they have not, as yet, discovered the cause of the failure." The "*speck*" grape was without question *Vitis labrusca* and the small blue grape was probably *Vitis riparia*.

Thirty years before the visit of Dankers and Sluyter the people of New Netherland addressed a remonstrance to the home government regarding certain abuses in the colony. This document[1] is headed with a chapter on the productions of New Netherland in which the wild grapes are mentioned and their cultivation is suggested. "Almost the whole country, as well the forest as the maize lands and flats, is full of vines, but principally — as if they had been planted there — around and along the banks of the brooks, streams and rivers which course and flow in abundance very conveniently and agreeably all through the land. The grapes are of many varieties; some white, some blue, some very fleshy and fit only to make raisins of; some again are juicy, some very large, others on the contrary small; their juice is pleasant and some of it white, like French or Rhenish Wine; that of others, again, a very deep red, like Tent; some even paler; the vines run far up the trees and are shaded by their leaves, so that the grapes are slow in ripening and a little sour, but were cultivation and knowledge applied here, doubtless as fine Wines would then be made as in any other wine growing countries."

Nicolls, the first English governor of New York, greatly desired to grow the vine for wine-making. In 1664 he granted Paul Richards a monopoly of the industry for the colony stipulating that he could make and sell wines free of impost and gave him the right to tax any person planting vines in the colony five shillings per acre.[2] Richards lived in the

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[1] *Documents Relating to the Colonial History of the State of New York*, Holland Documents, 1603–1656. Vol. I:277.

[2] The grant of the bounty is recorded in Volume II, *Deeds of New York*, page 87, on file in the office of the Secretary of State at Albany. It runs as follows:—

"Whereas Paul Richards an inhabitant of this Citty of New York hath made knowne to mee his intent to plant vines at a certaine Plantation that hee hath upon Long Island, called the little ffiefe, which if it succeed, may redound very much to the future benefitt and advantage of the inhabitants within this Government; and in regard, it will require much labour and a considerable charge

city of New York but his vineyard, as indicated in the grant, was located on Long Island. It may be assumed that this was the first attempt to grow grapes commercially in the State of New York. It would seem that the governor by granting a monopoly of the grape and wine industry took the surest means of killing the infant industry. The Earl of Bellomont, a later governor of the Colony, wrote to London with assurances of a great future of viticulture in the Colony.[1] For over a century after, there were spasmodic efforts to grow the Old World grape in and about New York City, and at the beginning of the Revolutionary War there were a few small vineyards and some wine-making on Manhattan Island.

There were many attempts to grow foreign grapes in New England. John Winthrop, governor of Massachusetts Bay Colony, had planted a vineyard in one of the islands, known as "Governor's Garden," in Boston Harbor before 1630. Vine-planters were sent to this colony in 1629.[2]

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to provide vines and to p'pare the ground and make it fitt for production of wines; ffor an Encouragemt to the said Paul Richards in his proceedings therein, I have thought fitt to grant unto him these following privileges (viz.)

"That all wines of the growth of such vines as the said Paul Richards shall plant, or cause to bee planted at the place aforesaid, shall be free from any kind of impositions for ever if sold in grosse, and not by retaile:

"That the said Paul Richards, his heirs, executors, or assignes shall have the privilege to have such wines sold by retaile in any one house in New York for the term of thirty years to come, from the time of the first selling of his wines, free from all imposts or excise:

"That every person who shall hereafter for thirty years to come, plant vines within any place in this Government, shall upon the first yeares improvement pay unto the said Paul Richards, his heirs, executors, or assignes, five shillings for every acre so planted as an acknowledgement of his being the first undertaker and planter of vines in these parts. For the confirmacon of the privileges above specified, I have hereunto put my hand and seale.

"Given at ffort James in New York this 10th day of January, 1664. RIC. NICOLLS."

[1] Bellomont's letter is as follows: "As to propagating vines in these plantations to supply all of the dominions of the Crown, I can easily make that appear. In the first place Nature has given us an index in these Plantations that points to us what may be done in that by the help of art. There grows wild grapes in all of the woods here in very great abundance; I have observed them in many places but especially above Albany on the side of the Hudson river where the vines all along twine around great trees and fair clusters of grapes appear sometimes above 30 foot from the ground. I have eaten of the wild grapes which I thought tastefull enough, only somewhat harsh as an effect of their wildness." Then follows an account of how the French had previously made wine in Canada but that the Court of France had forbade its being made fearing that it might be prejudicial to the wine trade of the French. Earl of Bellomont to the Lords of Trade, Nov. 28, 1700. *Documents Relating to Colonial History of the State of New York*, 4:787.

[2] Francis Higginson wrote in 1630: "excellent Vines are here up and downe in the Woods. Our Governour hath already planted a Vineyard with great hope of encrease."

There were plantations at the mouth of the Piscataqua in Maine as early or before Winthrop's plantings were made. In granting a charter to Rhode Island in 1663, Charles II sought to encourage viticulture in that State by offering liberal inducements to colonists who would grow grapes and make wine.[1] But if grapes were grown, or wine made from the foreign grape, no great degree of success was attained. Wine was made in plenty from the wild grapes in all of the New England colonies so that it was not because of Puritanical prejudices against wine that the grapes were not grown. The glowing terms in which travelers returning to England spoke of the native grapes and of the wine from them undoubtedly stimulated those founding the colonies to make every effort to introduce the cultivated grape even though the cold, bleak climate and thin soils of this northern region were inhospitable to a plant which thrives best in the sunny southern portions of Europe.

In only one of the states east of the Rockies is grape-growing recorded to have gained even a foothold before the introduction of varieties of native grapes. In this instance there is much doubt as to whether the varieties grown were pure-bred *Vitis vinifera*. Louisiana, while owned by France, grew grapes and made wine in such quantities, and the wine was of such high quality, so several of the old chroniclers say, that the French government forbade grape-growing in the colony. Since the wine-making was in the hands of the Jesuits who had learned the art in Europe, and since there were no cultivated varieties of native grapes at that time of which there is record, the presumption among the early writers was that these vineyards were of European grapes. Louisiana, however, was a vast and undefined region and it is not known where these oft-mentioned vineyards were located. It is probable in the light of what we now know that these Louisiana Jesuits made wine from native grapes either wild or cultivated.

The time covered so far is the two hundred years in which America was being colonized. We have seen that all of our European forefathers brought with them a love of the vine, or more correctly, a love of wine, and

[1] Bellomont records that a company of French immigrants had made good wine in Rhode Island toward the close of the 17th century but they were driven out of the Colony by the English and the industry ceased. *N. Y. Col. Doc.*, 4:787.

that throughout the period many experiments were made in all parts of the eastern United States to grow varieties of *Vitis vinifera*. The experiments were on a large scale and in the hands of expert vine-growers, as well trained as their fellow colonists in South Africa, New Zealand, Australia and South America, countries where the colonists grew the Old World grapes as easily and as well as they are grown in the most favored parts of Europe. It is certain that the failures recorded for these two hundred years were not due to lack of effort on the part of the settlers. We now pass to more recent efforts, even more thoroughly carried out, to grow the grape of the Old World in this part of the New World. The discussion of these later attempts cannot be full. The reader can readily turn to the horticultural literature of the century just closed and find much fuller records of them than space permits in this work.

One of the first and most notable of the vineyards in the eighteenth century was that of Colonel Robert Bolling of Buckingham County, Virginia. An account of his undertaking written by one of the Bolling family some years later reads as follows: "It is now but little known that this gentleman had early turned his attention to the cultivation of the vine, and had actually succeeded in procuring and planting a small vineyard of four acres, of European grapes, at Chellow, the seat of his residence: that he had so far accomplished his object as to have the satisfaction of seeing his vines in a most flourishing condition, and arrived at an age when they were just beginning to bear; promising all the success that the most sanguine imagination could desire, when, unfortunately for his family, and perhaps for his country, he departed this life while in the Convention in Richmond, in July, 1775. Thus all his fond anticipations of being enabled, in a short time, to afford to his countrymen a practical demonstration of the facility and certainty with which grapes might be raised, and wine made, in Virginia, were suddenly frustrated; all his hopes and prospects blasted; and owing to the general want of information, in the management of vines, among us at that time; and the confusion produced by the war of the revolution, which immediately followed, this promising and flourishing little vineyard was totally neglected and finally perished."[1]

[1] *American Farmer*, Baltimore, 10:387. 1828–29.

At the time of Bolling's death he was preparing to send to press a book on grape-growing entitled *A Sketch of Vine Culture*. The book was never printed but the manuscript was copied several times and parts of it were printed contemporaneously in the *Virginia Gazette*, and subsequently in the *Bolling Memoirs* and in the *American Farmer*.[1] Bolling's book was largely a compilation from European sources but it contained the experiences and observations of the author in cultivating European grapes in America and though not printed, was sufficiently distributed through manuscript copies and through the papers and books mentioned above, to give its author the honor of being the first American writer on grapes.

In an essay on the cultivation of the vine published in the first volume of the *Transactions of the American Philosophical Society*[2] printed in Philadelphia in 1771, a Mr. Edward Antill of Shrewsbury, New Jersey, gives explicit directions for grape-growing and wine-making.[3] Antill describes only foreign varieties and leads the reader to infer, though he does not say so, that he has grown many varieties of these grapes successfully. But neither his essay, nor his efforts at grape-growing, seemed to have stimulated a grape industry worthy of note. This essay of Antill's is the second American treatise on the cultivation of the grape and was for many years the chief authority on grape-growing in America. It is greatly to be regretted that a treatise which was to be quoted for fifty years could not have been more meritorious. The eighty quarto pages written by Antill give little real or trustworthy information. It is a rambling discussion of European grapes, wine-making, the temperance question, patriotism, "wellfare of country," and "good of mankind". He quotes Columella, gives methods of curing grapes for raisins, and winds up with a discussion of figs. Yet a hundred years ago it was the chief work on grape-growing.

A Frenchman, Peter Legaux, founded a company in 1793 for the cultivation of grapes at Spring Mill near Philadelphia. In 1800 he published

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[1] *American Farmer*, Baltimore, 10:387. 1828–29. *Ib.*, 11:172. 1829–30.

[2] Vol. I:117–198. 1769–71.

[3] All that is known of the life of Edward Antill is found in *Johnson's Rural Economy* where he is spoken of as "Mr. Antill, late of Middlesex County, New-Jersey, a gentleman who cultivated the grape with sedulous attention." *Johnson's Rural Economy:* 164. 1806.

an account of his venture.[1] A vineyard of European grapes was set out and the prospects seemed favorable for the success of the undertaking. But the grapes began to fail, dissensions arose among the stock-holders, the vineyards were neglected and the company failed. Legaux speaks of his experience in grape-growing as follows:[2] "But if the native grapes of America are not the most eligible for vineyards, others are now within the reach of its inhabitants. Some years since I procured from France three hundred plants from the three kinds of grapes in the highest estimation, of which are made Burgundy, Champagne and Bordeaux wines. These three hundred plants have in ten years produced 100,000 plants; which, were the culture encouraged, would in ten years more, produce upwards of thirty millions of plants; or enough to stock more than 8000 acres, at 3600 plants to the acre, set about three feet and a half apart. I have also about 3000 plants raised from a single plant procured a few years since from the Cape of Good Hope, of the kind which produces the excellent Constantia wines. The gentlemen who at different times have done me the honour to taste these wines can bear testimony to their good quality. Although made in the hottest season, (about the middle of August) yet they were perfectly preserved without the addition of a drop of brandy or any other spirit. And in this will consist one excellency of the wines here recommended to the notice of my fellow citizens; that being made wholly of

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[1] Legaux's paper is found as a treatise on the cultivation of the vine in *The True American* of March 24, 1800. The article contains about 2000 words, the main part of it being "A Statement of the Expense and Income of a Vineyard, Made on Four Acres of Land, situated in Pennsylvania, in the 40th Degree of Latitude."

Of Legaux's life, little is known, other than that he was a French vine-grower with an experimental vineyard, as he says in the above article, at "Spring Mill, 13 miles N. N. W. from Philadelphia." Johnson speaks of Legaux as a philanthropist; McMahon calls him a "gentleman of Worth and Science"; while Rafinesque accuses him of fraud and deception in the matter of calling the native grapes Bland and Alexander, *Madeira* and *Cape*.

Judging the man from his article in *The True American* and from the words of his contemporaries, he was a capable, enthusiastic and intelligent grape-grower. His philanthropy is more doubtful. It is true that he distributed many grape plants but as he himself says to "fellow citizens possessing pecuniary means." That he practiced deceit in the matter of the introduction of the Alexander as the Cape is probable. However, his deceit, if such it were, may be forgotten and he should be remembered as the chief disseminator of the Alexander, the first distinctive American variety of commercial value.

[2] *The True American*, March 24, 1800.

the juice of grapes, they will be light, wholesome, and excite an agreeable cheerfulness, without inflaming the blood, or producing the other ill effects of the strong brandied wines, imported from the southern parts of Europe. Since 1793, I have confined my attention chiefly to the multiplication of my vines, to supply the demand for plants, and to furnish an extended vineyard under my own direction, whenever my fellow citizens possessing pecuniary means, should be inclined to encourage and support the attempt."

Out of this venture, however, came the Alexander grape, an offspring of a native species, and not, as Legaux held, a foreign variety, which, as we shall see later, was the first variety to be grown on a commercial scale in eastern America. Johnson,[1] writing of Legaux's work with the grape, says that in 1801 cuttings were sent from the Spring Mill vineyards in quantities of fifteen hundred to Kentucky and Pennsylvania and smaller quantities to Connecticut, New York, New Jersey, Maryland, Virginia and Ohio, and indicates that these cuttings in their turn were multiplied so that many diverse experiments with foreign grapes arose from Legaux's efforts.

Chief of the experiments which Legaux's partial success in vine-growing stimulated was carried on in Kentucky by *The Kentucky Vineyard Society* of which John James Dufour, a Swiss, was leader.[2] It was to this Company that Legaux had sent the fifteen hundred cuttings mentioned above as going to Kentucky. Before founding his grape colony, Dufour had made a tour of inspection of all the vineyards that he could hear of in what then constituted the United States. His account of what he saw, given in his book *The Vine Dresser's Guide*, is the most accurate statement we have of grape-growing in America at the beginning of the nineteenth century.

Dufour's account, pages 18–24, runs as follows: "I went to see all the vines growing that I could hear of, even as far as Kaskaskia, on the borders of the Mississippi; because I was told, by an inhabitant of that town, whom I met with at Philadelphia, that the Jesuits had there a very successful vine-

[1] Johnson, S. W., *Rural Economy:* 156. New Brunswick, N. J., 1806.

[2] John James Dufour, born in the canton of Vaud, Switzerland, in 1763, came to America in 1796 to engage in grape-growing and wine-making. An account of his work is given in the text. In 1826 Dufour published the *Vine Dresser's Guide*, which became the authority on the culture of this fruit at that time. Dufour must be remembered for this book, for the dissemination of the Cape or Alexander grape, and as one of the pioneer vineyardists and wine-makers of the New World.

yard, when that country belonged to the French, and were afterwards ordered by the French government to destroy it, for fear the culture of the grapes should spread in America and hurt the wine trade of France. As I had seen but discouraging plantations of vines on that side of the Alleghany, and as the object of my journey to America, was purposely to learn what could be done in that line of business; I was desirous to see if the west would afford more encouragement. I resolved therefore on a visit to see if any remains of the Jesuits' vines were still in being, and what sort of grapes they were; supposing very naturally, that if they had succeeded as well as tradition reported, some of them might possibly be found in some of the gardens there. But I found only the spot where that vineyard had been planted, in a well selected place, on the side of a hill to the north east of the town, under a cliff. No good grapes, however were found either there, or in any of the gardens of the country. * * * In my journeying down the Ohio, I found at Marietta a Frenchman, who was making several barrels of wine every year, out of grapes that were growing wild, and abundantly, on the heads of the Islands of the Ohio River. known by the name of Sand grapes, because they grow best on the gravels; a few plants of which are now growing in one of our vineyards, given by the Harmonites under the name of red juice. * * * The various attempts at vineyards that I heard of, which I went to see, at Monticello, President Jefferson's place; which, in 1799, I perceived had been abandoned, or left without any care for three or four years before, which proved evidently, that it had not been profitable: At Spring Mill, on the Schuylkill, near Philadelphia, planted by Mr. Legaux, a French gentleman, and afterwards supported by a wealthy Society formed by subscription, at that City, for the express purpose of trying to extend the culture of the grape. I saw that vineyard in 1796, 1799 and 1806. On the estate of Mr. Caroll, of Carollton, below Baltimore, in Maryland; whither I went on purpose from Philadelphia in 1796, there was a small vineyard kept by a French vinedresser, and where they had tried a few sorts of the indigenous grapes. At the Southern Liberties of Philadelphia, I saw in 1806, a plantation of a large assortment of the best species of French grapes; which a French vinedresser had brought over the Atlantic. They were at their 2d or 3d years: they had not been attacked by the sickness: their nurse was

yet full of hope.—In 1796, I saw also, near the Susquehannah river, not far from Middletown, a vineyard that had been planted by a German; but who having died sometime before, the vineyard had been wholly neglected. I was told, it had produced some wine; but it had suffered so much delapidation, that I could not recognize the species of grapes."

With full knowledge of the failures of the past in growing grapes, and after his disheartening visits to a score or more of worthless vineyards planted with the grapes of his native country, Dufour embarked in the *Kentucky Vineyard Society* enterprise and gave the Old World grapes a thorough trial on an extensive scale, with an abundance of capital, and, to care for the vines, as skilled labor as could be obtained in the vineyards of Europe. As was the case with all past undertakings of the kind so this one proved a failure. In the words of Dufour "a sickness took hold of all our vines except a few stocks of Cape and Madeira grapes." The promoters became disheartened and the vineyard after being cultivated for several years was abandoned.

Members of the colony, thinking that a more favorable location might be found elsewhere in the valley of the Ohio, settled at Vevay, Indiana, in 1802. Dufour and several of his relatives were granted the privilege of purchasing lands with extended credit by an act of Congress May 1st, 1802. They purchased 2500 acres at the location of the new colony in Indiana and began anew the culture of the vine. For a time there was an element of prosperity in the enterprise but the vines became diseased and died, only one sort, the Cape or Alexander, gave returns for the care bestowed and by 1835 the Vevay vineyards ceased to exist. Could Dufour have foreseen the value of the native grapes for cultivation and devoted the capital and energy spent on European sorts to the best wild plants from the woods, grape culture in America would have been put forward half a century.

Other experiments with Old World grapes were tried in 1803 by the Harmonists, a religious-socialistic community founded in Germany, but which finally settled in America. After temporary sojourns in other settlements, the Harmonists founded a permanent colony in Pennsylvania near Pittsburg. Here they planted ten acres of European grapes and grew them with but temporary success, if any, for Dufour in 1826 visited the

colony and says: "None of the imported grapes do well there except the Black Juice, of which I saw but one plant; it is too small a bearer to be worth nursing."[1] Again there was disaster to an extensive experiment in the hands of skilled men. Besides having tried grape culture in Pennsylvania, the Harmonists made plantations at New Harmony, Indiana, where they settled for a time; but exact accounts of this experiment are wanting.

One other of the many organized attempts to grow the foreign grapes needs mention. When the Napoleonic wars were over a number of Bonaparte's exiled officers came to America. They were impoverished, and in order to help them, as well as to insure their becoming permanent settlers in the United States, the exiles were organized by American sympathizers into a society for the cultivation of the vine and the olive. The society was organized in the early fall of 1816 in Philadelphia and the remainder of the year was spent in prospecting for a suitable location for the venture. The colony finally decided to settle on the Tombigbee river in Alabama and petitioned Congress for a grant of land in that region. In the end the refugees obtained a grant from Congress of four contiguous townships, each six miles square[2] for the culture of the vine and the olive.

In 1817, an installment of one hundred and fifty French settlers left Philadelphia taking with them an assortment of grape and olive plants. December 12, 1821, Charles Villars, one of the company, reported to the American government[3] that there were then in the colony eighty-one actual planters, 327 persons all told, with 1100 acres in full cultivation, including 10,000 vines and that the company had spent about $160,000 in the venture. Villars tells in full of the ups and downs of the Society. It was apparent from the start that the olive could not be grown. The history of the vineyards on the Tombigbee, as he tells it, is but a record of misfortune. All efforts to cultivate the foreign vines resulted only in failure. The few vines that the vintners made grow yielded a scant crop of miserable quality which could not be made into wine because of ripening in the heat of summer. The land was not adapted to growing grapes. The Society, meeting failure at every turn, finally disbanded and the colonists were scattered. For a

[1] Dufour, John James. *Vine Dresser's Guide:* 307. 1826.

[2] *U. S. Statutes at Large.* 3:374.

[3] *American State Papers,* Public Lands, 3:396.

half century after, there were records in the southern agricultural literature of the attempts of stragglers or descendants of this colony to grow European grapes in the South. Yet these grapes are not now cultivated in this region, which seemingly has the climate and the soil of France.

The history of these French settlers on the Tombigbee is a most pathetic one.[1] Many of the leaders had been officers of high rank in Napoleon's armies unaccustomed to field work and the hardships of a new country. Here, in a rough and hardly explored country, part of which was overflowed half of the year, visited by all the sicknesses inherent to such a location, they passed several years in their attempts to grow European grapes. Failure was predestined because of natural obstacles which by this time were apparent, and was foreshadowed by so many previous unsuccessful attempts that it would seem that this culminating tragedy in growing European grapes could have been prevented. The certain failure of the attempt makes all the more pathetic the story of the Vine and Olive Colony on the Tombigbee.[2]

In closing the record of the Old World grape in America a few of the later individual attempts to grow this grape must be recounted.

Three generations of Princes experimented with European grapes at the famous Linnæan Botanic Garden, Flushing, Long Island. Wm. R. Prince[3]

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[1] For fuller accounts of this dramatic episode in French and American history. and in American agriculture, see: *The Napoleonic Exiles in America*, J. S. Reeves, Johns Hopkins University Studies, 23 Series, pp. 530–656; *The Bonapartists in Alabama*, A. B. Lyon, *Gulf State Historical Magazine*, March, 1903; *The French Grant in Alabama*, G. Whitfield Jr., *Ala. Hist. Soc.*, Vol. IV· *The Vine and Olive Colony*, T. C. McCorvey, *Alabama Historical Reports*, April, 1885.

[2] The last official account of this colony in the records of the United States Government is found in *American State Papers*, Vol. III. " In a letter of Frederick Ravesies to the treasury department, dated January 18, 1828, is the following: ' We have suffered severely from the unparalleled drought of the last summer; many of our largest and finest looking vines, which had just commenced bearing luxuriantly, were totally killed by the dry hot weather. Yet, notwithstanding this misfortune, the grantees, with increased diligence, are using every exertion to procure others which are thought to be more congenial to the soil and climate, and are now generally engaged in replanting.' " Quoted from *Studies in Southern and Alabama History*, 1904:131.

[3] William Robert Prince, fourth proprietor of the Prince Nursery and Linnaean Botanic Garden, Flushing, Long Island, was born in 1795 and died in 1869. Prince was without question the most capable horticulturist of his time and an economic botanist of note. His love of horticulture and botany was a heritage from at least three paternal ancestors, all noted in these branches of science, and all of whom he apparently surpassed in mental capacity, intellectual training and energy. He was a prolific writer, being the author of three horticultural works which will always take high rank among

author of *A Treatise on the Vine*, devoted his life to promoting the culture of the grape in America. He tried all of the European sorts obtainable, "reared" as he tells us, "from plants imported *direct* from the most celebrated collections in France, Germany, Italy, the Crimea, Madeira, etc.; and above two hundred varieties are the identical kinds which were cultivated at the Royal Garden of the Luxembourg at Paris, an establishment formed by royal patronage for the purpose of concentrating all the most valuable fruits of France, and testing their respective merits."[1] After nearly a half century of experimentation he gave up the culture of foreign grapes and largely devoted the last years of his life to growing and disseminating native varieties, exercising, probably, a greater influence on the culture of American grapes than any other of the many men who have helped improve the grapes of this country.

Nicholas Longworth,[2] of Cincinnati, Ohio, experimented with the European grapes for thirty years. His experience is best told in his own words written in 1846: "I have tried the foreign grapes extensively for wine at great expense for many years, and have abandoned them as unfit for our climate. In the acclimation of plants I do not believe. The white,

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those of Prince's time. These were: *A Treatise on the Vine*, *Pomological Manual*, in two volumes, and the *Manual of Roses*, beside which he was a lifelong contributor to the horticultural press. All of Prince's writings are characterized by a clear, vigorous style and by accuracy in statement. His works are almost wholly lacking the ornate and pretentious furbelows of most of his contemporaries though it must be confessed that he fell into the then common fault of following European writers somewhat slavishly. During the lifetime of Wm. R. Prince, and that of his father Wm. Prince, who died in 1842, the Prince Nursery at Flushing was the center of the horticultural nursery interests of the country; it was the clearing-house for foreign and American horticultural plants, for new varieties and for information regarding plants of all kinds.

[1] Prince, Wm. R. *A Treatise on the Vine:* 337. 1830.

[2] Nicholas Longworth, known as the "father of American grape culture", was born in 1783, in Newark, New Jersey. At an early age he went West making his home in Cincinnati where he became a lawyer, banker, and a man of large business affairs in what was then the far frontier. From his boyhood Longworth was interested in horticulture and as a young man became greatly interested in native grapes. He was one of the men to whom John Adlum sent the Catawba and he became its disseminator and a promoter for the region in which he lived, making this grape the first great American grape and Cincinnati the center of the foremost grape-growing region of the Continent. He was the first vineyardist to make wine on a large scale and perfected methods of making wine from the native grapes so that the product was comparable to that from the best wine cellars of Europe. Longworth introduced the first cultivated variety of the wild black raspberry, *Rubus occidentalis*, under the name of the Ohio Everbearing. His interest in the strawberry was second only to that in the grape and he not only did much to encourage its cultivation in America but also,

Sweetwater grape is not more hardy with me than it was thirty years since, and does not bear as well. I have tried them in all soils and with all exposures.

"I obtained 5,000 plants from Madeira, 10,000 from France; and one-half of them, consisting of twenty varieties of the most celebrated wine grapes from the mountains of Jura, in the extreme northern[1] part of France, where the vine region ends; I also obtained them from the vicinity of Paris, Bordeaux, and from Germany. I went to the expense of trenching one hundred feet square on a side hill, placing a layer of stone and gravel at the bottom, with a drain to carry off the water, and to put in a compost of rich soil and sand three feet deep, and planted on it a great variety of foreign wine grapes. All failed; and not a single plant is left in my vineyards. I would advise the cultivation of native grapes alone, and the raising of new varieties from their seed."[2]

The French Revolution drove a wealthy and educated Frenchman, M. Parmentier, to New York at the beginning of the nineteenth century. He planted about his place in Brooklyn a large garden in which there were many grapes. This garden afterward became a commercial nursery from which was distributed a considerable number of European grapes. Mr. Robert Underhill at Croton Point on the Hudson was induced to plant a vineyard of these but they soon went the way of all their kind, leaving Mr. Underhill only a consuming desire to plant grapes. This desire bore fruit, as we shall see. When the reign of terror had ceased, Parmentier returned to France from whence he sent many grapes to friends in America.

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after a long controversy with horticulturists and botanists, fully established the fact that many varieties of this fruit are infertile with themselves and that under cultivation infertile varieties must have sorts planted near them capable of cross-pollinating them. Longworth took a deep interest in horticulture generally and gathered about him a group of pioneer horticulturists who did much for American fruit-growing in the middle of the nineteenth century, in many respects molding and guiding the horticulture of that time in this country. Longworth wrote much for the contemporary horticultural magazines and published two small books, "*The Cultivation of the Grape and Manufacture of Wine*" and "*Character and Habits of the Strawberry Plant.*" He died in 1863, aged 80, at Cincinnati, one of the most distinguished, enterprising and wealthy citizens of his State. For further discussion of his life see Bailey's *Evolution of Our Native Fruits:* 61–65. 1898.

[1] Probably the northern part of the vine region of France; the Jura mountains are in the east central part.

[2] *Transactions New York State Agricultural Society*, 6:689. 1846.

He left a lasting impress on the horticulture and viticulture of America, through his experimental efforts with plants and his contribution to American horticultural literature. The Underhills (the father had been joined by his sons R. T. and W. A. Underhill) planted a vineyard of Catawbas and Isabellas in 1827. These vineyards grew until they covered seventy-five acres, the product of which was marketed in the metropolis and nearby cities. The grapes from this vineyard often sold for twenty-five cents a pound and supplied the whole market of the region. The grape industry of the Hudson River Valley began with Parmentier and the Underhills.

Another Frenchman, Alphonse Loubat, planted a vineyard of forty acres at Utrecht, Long Island, containing about 150,000 plants of foreign varieties. Here, we are told, "he strove against mildew and sun-scald for several years, but had to yield at last, as the elements were too much for human exertions to overcome."[1] Loubat attempted to protect his grapes from mildew by covering them with paper bags and was probably the originator of the practice of bagging grapes.

Not infrequently one may still find some varieties of the Old World grape grown out of doors with a fair degree of success in favored locations but always by the amateur and never in a commercial vineyard. These few pages rehearsing repeated failures without a single success, serve to show the uselessness of attempting to grow foreign grapes in eastern America. Their culture has been tried by thousands on a small scale and by many individuals with experience, knowledge and capital on a large scale. With all, the results have been the same; a year or two of promise, then disease, dead vines and an abandoned vineyard.

The causes for these failures have been indicated. As Dufour says, "a sickness takes hold of the vines." Phylloxera, mildew, rot—native parasites to which native grapes are comparatively immune—"take hold" of the foreign sorts and they die.

It is probable, too, that our climate, at the North at least, is not well suited to the production of the Old World grape. As a species, the Vinifera grapes thrive best in climates equable in both temperature and humidity.

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[1] Fuller, Andrew S. *Record of Horticulture:* 21. 1866.

The climate of eastern America is not equable; it alternates between hot and cold, wet and dry. The range in both temperature and humidity is far greater than in the grape-growing regions of Europe, California, South Africa or Australia. The fleshy roots of *Vitis vinifera* are more tender to cold than are those of the species of northern United States and this would prevent its culture becoming very general in many regions where native grapes can be grown.

It is only in the regions west of the Rocky Mountains, and more particularly in California, that the varieties of Vinifera are successfully grown in America. The great viticultural interests of the far West are founded upon the success of this one species. The native grapes can be grown but they cannot compete in California with *Vitis vinifera* for any purpose. Nevertheless American species are indispensable in this western region for stocks upon which to graft the Vinifera varieties, and it is probable that the time is not far distant when all California vines will be upon American roots. Within the boundaries of latitude in which Vinifera varieties are grown west of the Rocky Mountains the grape shows wonderful adaptability; it is found at all elevations permitting fruit culture; it grows on practically all soils; it thrives under irrigation or under dry farming; it is given various kinds of treatment, including total neglect, and still thrives; the number of varieties grown for wine, raisin and table grapes runs into hundreds. The truly wonderful success met with in the cultivation of this species west of the great continental divide makes all the more remarkable the fact that in no place east of the divide will varieties of it thrive.

We now pass to a consideration of the American grapes, their characters, the early notices of them, their rise, their success, and their future—a more pleasing task than to record disaster after disaster in growing the grape of the Old World.

CHAPTER II

AMERICAN GRAPES

The grape is preeminently a North American plant. The genus Vitis is a large one, from thirty to fifty species being distinguished for the world; more than half of these are found on this continent. But few other plants in America, or in the world, inhabit such varied and such extended areas. In North America wild grapes abound on the warm, dry soils of New Brunswick and New England, about the Great Lakes in Canada and in the United States, and on the fertile river banks and in the valleys, rich woodlands and thickets of the eastern and southern States. They thrive in the dry woods, sandy sea-plains, and reef-keys of the Carolinas, Georgia and Florida where the vines of the Scuppernong often run more than a hundred feet over trees and shrubs, rioting in natural luxuriance. They flourish in the mountains and limestone hills of the Virginias, Tennessee and Kentucky. They are not so common in the West, yet found in almost all parts of Missouri and Arkansas, and from North Dakota through Kansas to southern Texas. Some wild grape is found in each of the Rocky Mountain States on plain or mountain, or in river chasm or dry canon. Several species are found in New Mexico, Arizona and California, where if they did not furnish the Spanish *padres* of Santa Fe and San Diego with fruit for wine, they suggested to them the planting of the first successful vineyards in the United States.

How did the grape spread from the Carolinas to California and from subtropical Mexico to the barren plains of Central Canada? Why divide into its manifold forms in the distribution? These questions are of practical import to the grape-grower and breeder who seeks to improve this fruit. The knowledge of the distribution and evolution of plants obtained in the last half century is so complete that these questions present few difficulties to the naturalist of today. In answering them no one would now hold that the numerous species and their sub-divisions were created separately for the regions in which they grow. All would take the ground that the different wild forms come from one ancestral species. We can waive the question as to what the original species was and as to where it first grew.

It is certain that grapes have not been distributed over North America

by the hand of man. Probably they have been growing in the regions where they are now found since before the migration of the first savages. The agents of distribution have been natural ones, such as animals, birds, and lake and river currents. These have widened the area of a species to limits imposed by the hostile action of other plants and of animals and by geographical and physical conditions. As a species has encroached upon a new region, climate, soil, all of the conditions of environment, and the contest with other living things, have gradually modified its characters until in time it became so changed that it constituted a new species.

This descent from an original species with plants changed by environment has given us, in America, types of the wild grape as widely diverse as the regions they inhabit. The species found in the forests have developed long slender trunks and branches in their struggle to attain sunlight and air. At least two species are dwarf and shrubby, or infrequently climbing, two to six feet high, growing in dry sands, on rocky hills and mountains where roots must cling to rocks and penetrate into interstices. Still another form runs on the ground and over low bushes and is nearly evergreen, but in the herbarium can hardly be distinguished from a grape whose habit of growth is strikingly different. Some are long-lived, growing and bearing fruit for two or more centuries, while others reach no greater age than the ordinary shrub. Some have enormous stems, a foot or more in diameter, gnarled and picturesque and supporting a great canopy of branch and foliage,[1] while others are slender in stem and graceful, almost delicate, in character of vine. Not less remarkable than the differences in structure is the adaptability of the genus and some of the species to varied climatic conditions. Several of the wild grapes develop full size and display natural luxuriance and fruit-bearing qualities only in the Middle States, but may

[1] There is a wild grape vine (probably *Vitis aestivalis*) near Daphne, Alabama, on the shores of Mobile Bay, known as the "General Jackson vine" because of General Jackson having camped under it during the war with the Seminole Indians in 1817–18, which for age and size is truly remarkable. Mr. E. Q. Norton of Daphne writes of this vine as follows: "There is little known regarding the Jackson grape vine beyond the fact that the oldest man living here when I came here — 20 years ago — told me that the Indians told him when he came here as a boy — 90 years ago — that the vine was at that time an old one, which had been growing longer than any of them could remember. It was 27 inches through the trunk, four feet above the ground, when I measured it ten years since, and the vines were running over the surrounding trees for many rods. The grapes were very small, quite hard and not very juicy."

be found on dry, gravelly, wind-swept hills far to the north or in some hot and humid atmosphere of the South, as if to show indifference to wet or dry, heat or cold.

On the other hand there are many strong points of resemblance between the score or more of species. The organs and characters that do not bear the strain of changed environment, nor suffer in the perpetual warfare of nature, are much the same in all of the species of Vitis. Thus the structure of flowers, fruits and seeds is practically identical; all have naked-tipped tendrils; leaves and leaf-buds are very similar; and the various species usually hybridize freely. They are alike in the unlikeness of individual plants in any of the species; that is, all of the individuals of the genus are most variable and seeds taken from the same vine may produce plants quite unlike one another and quite unlike the parent.

These few facts regarding the evolution and distribution of American grapes lead to two important conclusions:

First, the species are so distributed throughout the United States, and individuals of the species grow in such abundance and luxuriance, as to suggest that we shall be able to improve and domesticate some one or more of them for all of the agricultural regions of the country. For it is proved that nearly all of the wild grapes have horticultural possibilities; and experience with many plants teaches that the boundaries of areas inhabited by the wild species of a given region coincide with those suited to the production of the domesticated plant in that region. It is not possible to tell where the grape-growing regions of the future are to be located; for species and individuals of this fruit are so common that no one can say where the grape is most at home in America.

Second, grapes are so variable and plastic in nature that, were it not known from experience, it could be assumed that they would yield readily to improvement. Besides being variable they hybridize freely and thus the plant-breeder can obtain desirable starting points. There are indications that some of the characters of grapes, at least, follow Mendel's Law, and when once these have been determined, and the more important unit characters segregated and defined, it ought to be possible to combine and rearrange the characters of this fruit with some system and surely with more certainty than in the past.

This brief introduction leads us to the consideration of American grapes as cultivated plants. We have seen that it is an absolute impossibility to grow the Old World grape in eastern America. The fruit-growers in this great region are forced to plant the native grapes if any. It required two hundred years to establish this fact and it is less than a hundred years since grape-growers have generally acknowledged it as a fact. What was known of American grapes during the two hundred years wasted in attempting to grow the foreign Vinifera? And what has been accomplished in a century in ameliorating the native grapes?

The earliest European visitors to the Atlantic seaboard delighted in the wild grapes which they found everywhere and which reminded them of the Old World vineyards. Had they never seen such a fruit, the wild grapes could not long have escaped their attention; for the Indians knew and used them as they did potatoes, corn, and tobacco. In the narratives of the early voyages the grape is often in the lists of the resources and treasures of the new-found continent. Unfortunately it was not considered of great intrinsic value but only suggested to the explorers that the grape of the old home might be grown in the new home. Could a part of the exaggerated esteem given by the early European travelers and home-seekers to sassafras, ginseng and other such plants, have been bestowed upon the wild grapes which over-run the country, viticulture would have taken rank with the tobacco, lumber and the fish industries of the early settlers.

In the history of Vinland, or more properly Wineland, we find the first record of American grapes.[1] Biarni Heriulfsson, a Norseman, while

[1] The following is an account of the discovery of grapes in Vinland translated from the Icelandic manuscript by Reeves:

" When they had completed their house Leif said to his companions, ' I propose now to divide our company into two groups, and to set about an exploration of the country; one half of our party shall remain at home at the house, while the other half shall investigate the land, and they must not go beyond a point from which they can return home the same evening, and are not to separate. Thus they did for a time; Leif himself, by turns, joined the exploring party or remained behind at the house. * * *

" It was discovered one evening that one of their party was missing, and this proved to be Tyrker, the German. Leif was sorely troubled by this, for Tyrker had lived with Leif and his father for a long time, and had been very devoted to Leif, when the latter was a child. Leif severely reprimanded his companions, and prepared to go in search of him, taking twelve men with him. They had proceeded but a short distance from the house, when they were met by Tyrker, whom they received most cordially. Leif observed at once that his foster-father was in lively spirits. * * * Leif

making a voyage from Iceland to Greenland, 986 A. D., was driven by a storm to the coast of New England but did not touch land. Leif the Lucky, son of Eric the Red, about 1000 A. D., visited the country discovered by Biarni. One of Leif's men, Tyrker, a German who "was born where there is no lack of either grapes or vines," discovered grapes, whereupon Leif named the country "Wineland." Other Norsemen in at least two expeditions visited Wineland, supposed to be a part of Rhode Island or Massachusetts, and for centuries after, the land discovered by Leif the Lucky was known in Icelandic literature as "Wineland the Good." The first European to touch the New World christened it after its grapes.

The next record we have of American grapes comes from an Englishman, one Captain John Hawkins, who visited the Spanish settlements in Florida in 1565.[1] In his account of the colony he speaks of the wild grapes, comparing them, as did all the early explorers, with those of Europe. He indicates further that the Spaniards had discovered the value of the wild grape for domestic purposes and says that they had made twenty hogsheads of wine in a single season. It is almost certain that this grape was *Vitis rotundifolia*, best represented by the Scuppernong, which is commonly found on the Atlantic sea-coast from Maryland to Florida.

The first English colonists, like the Norsemen, declared the new-found world to be a natural vineyard. Amadas and Barlowe, sent out by Raleigh in 1584, described the land[2] "so full of grapes as the very beating and surge of the sea overflowed them, of which we found such plenty, as well there as in all places else, both on the sand and on the green soil, on the hills as on

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addressed him, and asked: 'Wherefore art thou so belated, foster-father mine, and astray from the others' In the beginning Tyrker spoke for some time in German, rolling his eyes, and grinning, and they could not understand him; but after a time he addressed them in the Northern tongue: 'I did not go much further [*than you*], and yet I have something of novelty to relate. I have found vines and grapes.' 'Is this indeed true, foster-father?' said Leif. 'Of a certainty it is true', quoth he, 'for I was born where there is not lack of either grapes or vines.' They slept the night through, and on the morrow Leif said to his shipmates: 'We will now divide our labours, and each day will either gather grapes or cut vines and fell trees, so as to obtain a cargo of these for my ship.' They acted upon this advice, and it is said, that their after-boat was filled with grapes. A cargo sufficient for the ship was cut, and when the spring came, they made their ship ready, and sailed away; and from its products Leif gave the land a name, and called it Wineland." *Finding of Wineland the Good:* 65. Oxford University Press, London, 1890.

[1] Winsor, Justin. *Narrative and Critical History of America*, Vol. III:61.

[2] First Voyage to Virginia, *Hakluyt's Voyages*, 3:301–306.

the plains, as well as on every little shrub as also climbing towards the top of high cedars, that I think in all the world the like abundance is not to be found."

Ralph Lane, in a subsequent expedition of Raleigh's, in a letter to Hakluyt, pronounced the grapes of Virginia to be larger than those of France, Spain or Italy.[1]

The region described by Amadas and Barlowe is that of the two great sounds, Albemarle and Pamlico, on the coast of North Carolina and more specifically Roanoke Island. It was to this place that Raleigh sent his expeditions, with one of which Amadas and Barlowe were connected, and established the earliest colony of Englishmen in the New World. The first home of Europeans in America was in Vinland, named for its grapes. The first home of Englishmen was on Roanoke Island, "so full of grapes that the very sea overflowed them."

A few years later, Thomas Hariot, in a description of Virginia which must have done much to decide the English as to the advisability of establishing colonies in America, gave a detailed account of the merchantable commodities the new countries afforded. Among these he mentions grapes which he describes as being of two kinds that the soil yields naturally and abundantly, of which one was small and sour and of the bigness of the European grape while the other was of greater size and more sweet and luscious. Hariot concludes his description with the statement that "when they are planted and husbanded as they ought, a principal commodity of wine may be raised."[2]

Of the later accounts given of grapes in Virginia and the Carolinas by the colonizers and adventurers of the seventeenth century there are so many that it is impossible to present all and difficult to sort out those most apt. A few more may be given:

Captain John Smith, soldier, colonizer and Virginian planter, writing in 1606 describes two sorts of wild grapes. He says:[3] "Of vines great abundance in many parts that climbe the toppes of highest trees in some places, but these beare but few grapes. Except by the rivers and savage

[1] *Hakluyt's Voyages*, 3:311.

[2] Discourse of Thomas Hariot, *Hakluyt's Voyages*, 3:326.

[3] *Smith's History of Virginia*, 1:122 (1629) Reprint 1819.

habitations, where they are not overshadowed from the sunne, they are covered with fruit, though never pruined nor manured. Of those hedge grapes we made neere twentie gallons of wine, which was like our French Brittish wine, but certainely they would prove good were they well manured. There is another sort of grape neere as great as a Cherry, this they [Indians] call *Messamins*, they be fatte, and the juyce thicke. Neither doth the taste so well please when they are made in wine."

It is worthy of remark that the first English colonist in the New World noticed that the vines in the vicinity of the Indian habitations and along the edges of creeks, rivers and swamps, where not overshadowed from the sun, were covered with fruit. The statement of this fact, coupled with the one following, "but certainely they would prove good were they well manured," indicates that the possibility of successful cultivation of the wild grapes was considered at this early time. In fact, as we have seen, Lord Delaware at once sought to test the virtues of the native grapes by bringing over a number of French vine-dressers, who not only planted cuttings imported from Europe but proceeded at once to transplant the vine of the country.[1] A few years later, according to Bruce, Sir Thomas Dale "established a vineyard at Henrico not long after the foundation of that settlement, covering an area of three acres, in which he planted the vines of the native grape for the purpose of testing their adaptability to the production of wines that could be substituted for those of France and Spain."[2]

Francis Maguel, who visited Virginia in 1609, stated that the wine made in the colony reminded him of the Alicante which he had drunk in Spain.[3]

The first Secretary of the Colony, William Strachey, was somewhat fulsome in his praise of the new found fruit. Writing[4] in 1610, he says that the vines burden every bush, climb to the top of the highest trees and are always full of clusters of grapes though never pruned or manured. He declares that the grapes are as good as those to be found between Paris and Amiens and that the wine made by the settlers from the wild grapes was equal to French or British wine, "being strong and headdy." In

[1] *Works of Capt. John Smith*, p. 502.

[2] Bruce, Philip Alexander. *Economic History of Virginia in the Seventeenth Century*, Vol. 1:219. 1896.

[3] Report of Francis Maguel, Spanish Archives, *Brown's Genesis of the United States:* 395. 1610.

[4] *The History of Travaile into Virginia:* 120. 1610, printed 1849.

closing his description he states that by art and industry skillful vignerons could bring viticulture unto such perfection as will enable the colony to export wine to the mother country.

An anonymous writer in 1649, who sets out to give a "full and true relation of the present state of the plantations, their health, peace and plenty," etc., etc., thought that the colony needed only some one to set an example to the ordinary settlers to induce them to grow grapes. This writer says: "Vines in abundance and variety, do grow naturally over all the land, but by the birds and beasts, most devoured before they come to perfection and ripenesse; but this testifies and declares, That the Ground, and the Climate is most proper, and the Commodity of Wine is not a contemptible Merchandize; but some men of worth and estate must give in these things example to the inferior inhabitants and ordinary sort of men, to shew them the gain and Commodity by it, which they will not believe but by experience before their faces:"[1]

A hundred years later, according to Beverly, the grape was scarcely cultivated, the masses of the people being content with the fruit of the wild vines which grew everywhere in the forest. So far as is known there were in Beverly's time, 1722, no named varieties and there had been no efforts to improve the wild grapes in any way. There are no indications from the early writings to show that the Virginian settlers even knew how to propagate grapes. The reason for this neglect is largely to be sought for in the last sentence in the subjoined footnote from Beverly.[2] This neglect

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[1] Anonymous. *A Perfect Description of Virginia.* 1649, Peter Force's Tracts, Vol. II, 1838.

[2] "Grape vines of the English stock, as well as those of their own production, bear most abundantly, if they are suffered to run near the ground, and increase very kindly by slipping; yet very few have them at all in their gardens, much less endeavor to improve them by cutting or laying. But since the first impression of this book, some vineyards have been attempted, and one is brought to perfection, of seven hundred and fifty gallons a year. The wine drinks at present greenish, but the owner doubts not of good wine, in a year or two more, and takes great delight that way.

"When a single tree happens in clearing the ground, to be left standing, with a vine upon it, open to the sun and air, that vine generally produces as much as four or five others, that remain in the woods. I have seen in this case, more grapes upon one single vine, than would load a London cart. And for all this, the people till of late never removed any of them into their gardens, but contented themselves throughout the whole country with the grapes they found thus wild." Beverly, Robert. *The History of Virginia:* 260. 1722, Reprint, 1855.

was in spite of the fact that from the first the settlers had noted that when the vines were open to the sun the crop was improved.

In the northern colonies, as in Virginia, about the first object to attract the attention of the early settlers was the wild grape. The grape, possibly more than any other natural product of the soil, is mentioned in the preliminary surveys of the Atlantic Coast as offering reasonable ground for the expectation that American soils would furnish all of the supplies necessary for the sustenance and comfort of settlers. A few statements from the early explorers and visitors in the Middle and New England States will serve to show how plentiful wild grapes were in these regions and the estimation in which they were held.

In Delaware, Beauchamp Plantagenet, describing a "Uvedale under Websneck," in his account of New Albion, says that it contains "four sorts of excellent great vines running on mulberry and sassafras trees; there are four sorts of grapes, the first is the Thoulouse Muscat, sweet scented, the second the great fox and thick grape, after five months reaped being boiled and salted, and well fined, it is a strong red Xeres; the third a light Claret, the fourth a white grape creeps on the land, maketh a pure gold color white wine; Tenis Pale, the Frenchman, of these four made eight sorts of excellent wine, and of the Muscat acute boiled that the second draught will fox[1] a reasonable pate four months old: and here may be gathered and made two hundred ton in the vintage month, and replanted will mend."

In New England the seventeenth century notices of the wild grape are even more numerous than similar records to the south but they are briefer and the northern observer did not recognize the possibilities of their domestic use and of bringing them under cultivation. This seeming neglect of the Puritans was not because the northern wild grapes are inferior to those of Virginia and the Carolinas, but more likely because of the social and industrial conditions of the colonists. The richer planters in the South had time for wine-making, the only purpose for which grapes were then grown, and for growing the grapes. The New Englanders had to struggle for the necessities of life.

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[1] "Will fox," *i. e.* intoxicate. See footnote on page 4.

It is significant, too, that the Southerners were fond of wine, and imported Madeira in large quantities. In New England, rum seems to have been preferred to wine, and as its manufacture from molasses is very simple and the latter was to be had from the West Indies at small cost, wine-making and grape-growing received small attention.

Yet nearly all of the writers on the resources of the New England Colonies mentioned grapes. Thus Governor Edward Winslow writing in 1621 of the country in which the Puritans had found a home says: "here are grapes, white and red, and very sweet and strong also." We have seen that Winthrop was so impressed with the possibility of grape-growing in the new colony that he secured a grant of Governor's Island in Boston Harbor upon which to plant a vineyard. In Thomas Morton's *New English Canaan* is found the best account of the wild grapes of New England as the Puritan found them. He says:[1] "Vines, of this kinde of trees, there are that beare grapes of three colours, that is to say: white, black, and red.

"The Country is so apt for vines, that (but for the fire at the spring of the yeare) the vines would so over spreade the land, that one should not be able to passe for them, the fruit is as bigg of some as a musket bullet, and is excellent in taste."

John Josselyn in *New England's Rarities*, speaks of a grape having "a taste of gunpowder," a short but vivid description of *Vitis labrusca*.[2] William Wood in *New England's Prospect* gives still another account of the grapes of New England.[3]

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[1] *New English Canaan*, 1632. Reprinted in *Force's Tracts*, 1838.

[2] *Vine*, much differing in the fruit, all of them very fleshy, some reasonably pleasant; others have a taste of Gun Powder, and these grow in swamps, and low wet Grounds. Josselyn, John, Gent. *New England's Rarities:* 66. London, 1672.

[3] Speaking of the Horne-bound tree (probably hornbeam from his description) he says: "This Tree growing with broad spread Armes, the vines winde their curling branches about them; wnich vines affoard great store of grapes, which are very big both for the grape and Cluster, sweet and good: these be of two sorts, red and white, there is likewise a smaller kind of grape which groweth in the Islands which is sooner ripe and more delectable; so that there is no knowne reason why as good wine may not be made in those parts, as well as in *Burdeuax in France;* being under the same degree. It is a great pittie no man sets upon such a venture, whereby he might in small time inrich himselfe, and benefit the Countrie, I know nothing which doth hinder but want of skilfull men to manage such an employment: For the countrey is hot enough, the ground good enough, and many convenient hills lye towards the south Sunne, as if they were there placed for the purpose." Wood, William. *New England's Prospect:* 20. London, 1634.

The references given are sufficient to show that the value of the native grapes as a source of food and for wine was recognized by the first settlers in practically all of the colonies and that their possibilities as cultivated plants were considered by some of the colonizers. Yet for two hundred years there were no zealous efforts made to cultivate American grapes. Indeed, there are far fewer references to the wild grapes of the country in the eighteenth century than in the seventeenth. The reasons for this neglect of a plant which could so easily have been improved by cultivation, and this must have been apparent, are several. During all of this period the European grape was being tried and all hopes for viticulture were centered about it. Again, fruit of any kind was not a common article of diet with Americans until even so recently as a generation ago, and native grapes are dessert fruits, not wine fruits, and wine was the purpose for which all grapes were grown until the Catawba, the Concord and the Delaware whetted the appetites of fruit eaters for a dessert grape.

In the history of the amelioration of the American grapes we can skip the period from the early settlement of the country, a period represented by the above quotations, to the first years of the United States as a lapse of time in which there were no steps forward and in which even information concerning grapes was scarcely increased. The evolution of American grapes began with the opening of the nineteenth century, about the only accounts of grapes during the eighteenth century worthy of note being those of John Lawson, 1714; Robert Beverly, 1722; Col. Robert Bolling, 1765; Edward Antill, 1769; and Peter Legaux, 1800. All of these writers excepting Lawson were concerned with European grapes, and their relations to grape-growing were therefore discussed in the chapter on the Old World grape. It remains, however, to call attention to such statements as were made by them of American grapes.

John Lawson, a Scotch engineer, spent eight years, beginning in 1700, exploring and surveying North Carolina. A part of this time he was Surveyor General for the State and through natural desire and vocation he became familiar with the flora of North Carolina. In his history of that State, written in 1714, he gives an account of its natural resources in which the grapes of the region are several times described. He distinguishes six

kinds, three of which he mentions as having been removed to the gardens. His fullest account runs as follows:[1]

"Among the natural fruits, the vine takes first place, of which I find six sorts, very well known. The first is the black bunch grapes which yield a crimson juice. These grow common and bear plentifully, they are of a good relish, though not large, yet well knit in the clusters. They have a thickish skin and large stone, which makes them not yield much juice. There is another sort of black grapes like the former in all respects, save that their juice is of a light flesh color, inclining to a white. I once saw a spontaneous white bunch grape in Carolina; but the cattle browzing on the sprouts thereof in the spring, it died. Of those which we call fox grapes, we have four sorts; two whereof are called summer grapes, because ripe in July; the other two winter fruits, because not ripe till September or October. The summer fox grapes grow not in clusters or great bunches, but are about five or six in a bunch, about the bigness of a damson or larger. The black sort are frequent, the white not so commonly found. They always grow in swamps and low, moist lands, running sometimes very high and being shady, and therefore proper for arbours. They afford the largest leaf I ever saw to my remembrance, the back of which is of a white horse flesh color. This fruit always ripens in the shade. I have transplanted them into my orchard and find they thrive well, if manured. A neighbor of mine has done the same; mine were by slips, his from the roots, which thrive to admiration, and bear fruit, though not so juicy as the European grape, but of a glutinous nature. However it is pleasant enough to eat.

"The other winter fox grapes are much of the same bigness. These refuse no ground, swampy or dry, but grow plentifully on the sand hills along the sea coast and elsewhere, and are great bearers. I have seen near twelve bushels upon one vine of the black sort. Some of these, when thoroughly ripe, have a very pretty vinous taste and eat very well, yet are glutinous. The white sort are clear and transparent, and indifferent small stones. Being removed by the slip or root, they thrive well in our gardens, and make pleasant shades."

In another part of his history, Lawson says that in 1708 the French

[1] Lawson, John. *History of North Carolina:* 169–171. 1714, Reprint 1860.

Huguenots on Trent River, North Carolina, were cultivating European grapes for wine-making.[1] Again he devotes several pages to the subject of grape-growing in North Carolina.[2] He held that this "noble vegetable" could be brought to the same perfection as in similar latitudes in Europe. He states that Nathaniel Johnson had rejected all exotic vines and was cultivating native sorts from which he was making excellent wine. Lawson admonishes his readers that in a new country the settlers are under the necessity of making use of the natural products of the soil of which, in Carolina, the wild grape is most worthy of notice. He calls attention to the fact that conditions are so different in America that European methods of cultivation and care cannot be followed. Lastly he states that he had planted seeds from the white grapes of Madeira from which he hoped to raise a vineyard. Lawson is deserving of esteem as an energetic pioneer, an accurate historian, as one of the first American naturalists, and as an early vineyardist and horticulturist, for he experimented with other fruits than the grape. Poor Lawson was burned to death by the Indians in the prime of his career, cutting short experiments which might have materially hastened the establishment of viticulture in America.

The best account of the grapes of Virginia given in the later colonial times is that of the historian Robert Beverly who is very explicit in his description of the sorts growing wild in that State. He describes them as follows:[3] "Grapes grow there [Virginia] in an incredible plenty, and variety; some of which are very sweet and pleasant to the taste, others rough and harsh, and perhaps fitter for wine or brandy. I have seen great trees covered with single vines, and those vines almost hid with the grapes. Of these wild grapes, besides those large ones in the mountains, mentioned by Batt in his discovery, I have observed four very different kinds, viz:

"One of the sorts grows among the sand banks, upon the edges of the low grounds, and islands next the bay, and sea, and also in the swamps and breaches of the uplands. They grow thin in small bunches, and upon very low vines. These are noble grapes; and though they are wild in the woods, are as large as the Dutch gooseberry. One species of them is white,

[1] Lawson, John. *History of North Carolina:* 141. 1714, Reprint 1860.

[2] *Ib.:* 184–189.

[3] Beverly, Robert. *History of Virginia:* 105–107. 1722, Reprint 1855.

others purple, blue and black, but all much alike in flavor; and some long, some round.

"A second kind is produced throughout the whole country, in the swamps and sides of hills. These also grow upon small vines, and in small bunches; but are themselves the largest grapes as big as the English bullace, and of a rank taste when ripe, resembling the smell of a fox, from whence they are called fox grapes. Both these sorts make admirable tarts, being of a fleshly substance, and perhaps, if rightly managed, might make good raisins.

"There are two species more, that are common to the whole country, some of which are black, and some blue on the outside, and some white. They grow upon vast, large vines, and bear very plentifully. The nice observer might, perhaps, distinguish them into several kinds, because they differ in color, size and relish; but I shall divide them only into two, viz: the early, and the late ripe. The early ripe common grape is much larger, sweeter, and better than the other. Of these some are quite black, and others blue, and some white or yellow; some also ripen three weeks, or a month before the other. The distance of their ripening, is from the latter end of August, to the latter end of October. The late ripe common grapes are less than any other, neither are they so pleasant to the taste. They hang commonly to the latter end of November, or till Christmas; all that I have seen of these are black. Of the former of these two sorts, the French refugees at the Monacan Town made a sort of claret, though they were gathered off of the wild vines in the woods. I was told by a very good judge who tasted it, that it was a pleasant, strong, and full-bodied wine. From which we may conclude, that if the wine was but tolerably good, when made of the wild grape, which is shaded by the woods from the sun, it would be much better, if produced of the same grape cultivated in a regular vineyard."

Beverly could write with some authority on grapes for he was at that time much interested in the general question of grape-growing. Besides he was of an inquiring mind and seems to have been an untiring experimenter with the agricultural plants of his own and other lands. Charles Campbell in his introduction to the reprint of *Beverly's Virginia* in 1855, gives the following account of a vineyard planted by the historian: "John Fontaine, son of a Huguenot refugee, having come over from England to

Virginia, visited Robert Beverly, the author of this work, in the year 1715, at his residence, near the head of the Mattapony. Here he cultivated several varieties of the grape, native and French, in a vineyard of about three acres, situated upon the side of a hill, from which he made in that year four hundred gallons of wine. He went to very considerable expense in this enterprise, having constructed vaults of a wine-cellar. But Fontaine comparing his method with that used in Spain, deemed it erroneous, and that his vineyard was not rightly managed. The home-made wine Fontaine drank heartily of, and found it good, but he was satisfied by the flavor of it that Beverly did not understand how to make it properly. * * * He had laid a sort of wager with some of the neighboring planters, he giving them one guinea in hand, and they promising to pay him each ten guineas, if in seven years he should cultivate a vineyard that would yield at one vintage seven hundred gallons of wine. Beverly thereupon paid them down one hundred pounds, and Fontaine entertained no doubt but that in the next year he would win the thousand guineas." And Beverly won the guineas.

Bolling in his *Sketch of Vine Culture*, 1765, mentions native grapes only as they indicate to him the adaptability of the country for the European sorts. Yet he suggests, and was probably the first to do so, the possibility of hybridization between American and the European species. He says: "Would it not be well for us to attempt the raising of new varieties, by marrying our native with foreign vines?" He then gives a plan whereby the vines may be planted as to "so interlock their branches as that they shall be completely blended together." He says, "they will then feed from the blossoms of each other, and when the fruit is ripe, and if seeds are saved from it and sown in nurseries, * * * it is probable that we shall obtain other varieties better adapted to our climates and better for wine and table, than either of those kinds from which they sprung. Beyond these brief mentions Bolling does not discuss native grapes, though he tells of the origin of the Bland grape, which we now know to be a native, and wrongly says that it grew from the seed of a European raisin.

Antill, in his *Essay on the Cultivation of the Vine*, a treatise discussed in the previous chapter, gives no varieties of native grapes, though he says that he had just entered upon a trial of them. His brief discussion of

American vines is well worth quoting in full as showing the status of the species known to Antill just previous to the Revolutionary War:[1]

"The reason for my being silent about vines that are natives of America, is, that I know but little of them, having but just entered upon a trial of them, when my very ill state of health forbade me to proceed: From what little observation I have been able to make, I look upon them to be much more untractable than those of Europe, they will undergo a hard struggle indeed, before they will submit to a low and humble state, a state of abject slavery. They are very hardy and will stand a frame, for they brave the severest storms and winter blasts, they shrink not at snow, ice, hail or rain; the wine they will make, I imagine from the austerity of their taste, will be strong and masculine.

"The Fox-Grape, whose berries are large and round, is divided into three sorts, the white, the dark red and the black; the berries grow but thin upon the bunches, which are plain without shoulders. They delight most in a rich sandy lome, here they grow very large and the berries are sweetest, but they will grow in any grounds, wet or dry; those that grow on high dry grounds generally become white, and the colour alters to a dark red or black, according to the lowness and wetness of the ground; the situation I think must greatly affect the Wine, in strength, goodness and colour; the berries are generally ripe the beginning of September, and when fully ripe they soon fall away; thus much I have observed as they grow wild. What alteration they may undergo, or how much they may be improved by proper soils and due cultivation I cannot say.

"There is a small black Grape, a size bigger than the winter Grape, that is ripe in September; it is pleasant to eat, and makes a very pretty Wine, which I have drank of, it was four years old, and seemed to be the better for its age; the colour was amber, owing to the want of knowing how to extract the tincture; this Grape is seldom to be found; there is a Vine of them near John Taylor, Esq; at Middletown, Monmouth, and there are some of them in Mr. Livingston's Vineyard at Piscataqua in New-Jersey. I think they are well worth propagating.

"The frost or winter Grape is known to every body, both the bunches

[1] *Transactions American Philosophical Society*, 1:191–193. 1769–71.

and berries are small, and yield but little juice, but the richness of the Wine may make up for the smallness of the quantity; the taste of the Grape is austere till pretty hard frosts come, and then it takes a favourable turn and becomes very sweet and agreeable; this Vine shoots forth great numbers of slender branches, and might do very well for the south and southeast sides of a summer-house or close walk, if all the useless and barren branches were cut away.

"The Vines of America are fit for strong high espaliers, but if I mistake not, he must watch them narrowly, must take away every unnecessary and unprofitable branch, and trim them sharp and close, that means to keep them within bounds."

Peter Legaux, in his patriotic address "To the People of the American States,"[1] wherein he admonishes them the culture of the vine is a national duty, was intent, as we have seen, on making the Old World grape grow in America — even if it were necessary to palm off an American sort as an Old World kind. He dismisses American grapes with even less attention than Antill gave them, his sole notice of them being embodied in the remarks that "with skillful management many of them would make good and wholesome wines" and that "if the native grapes of America are not the most eligible for vineyards, others are now within the reach of its inhabitants." Indirectly he was, however, of great service in distributing the first native varieties, for as Rafinesque says, "by calling our Bland and Alexander grapes *Madeira* and *Cape*, he was instrumental in diffusing them among those who would not have noticed nor bought them if known as native vines."

Following Legaux's address of 1800 several treatises were written within a few years which give us a very clear idea of the status of the American grapes at the beginning of the nineteenth century. Chief of these, and probably in chronological order, is a paper in *The Domestic Encyclopedia* on the vine, written by James Mease, M. D.[2] It appears that Dr. Mease wrote

[1] *The True American*, Philadelphia, March 24, 1800.

[2] But little is known of Dr. James Mease other than that he was one of the editors of *The Domestic Encyclopedia*, a Fellow of the *American Philosophical Society* and Vice-President of the *Philadelphia Agricultural Society*. That he was a student of American grapes is shown in his letter of transmissal of Bartram's paper to the *Medical Repository* in which he says: "It is my present intention to publish the description of one species of vine every year in Latin and English, with a coloured plate, and I

in 1802 but the Encyclopedia did not appear until 1804.[1] Embodied in the article is an "interesting paper on the vines of the United States drawn up by William Bartram at the request of the editor." Bartram's paper was written in the spring of 1802. Mease's discussion of the vine merits especial attention. While the best of Antill's and Legaux's observations are made use of, yet much is added to them and the paper is far more reasonable in every respect than those of either of the two previous writers, and is wholly lacking in the ostentatious modesty and circumlocution of Antill and the grandiloquence and self esteem of Legaux. It may justly be considered the first rational discussion of the culture of the grape in America.

Mease's paper deserves attention for another reason. It contains the first public utterance condemning the culture of the Old World grape and recommending the cultivation of native grapes. He says: "From the experience, however, of the editor and his friends who have found much difficulty in naturalizing foreign vines, he recommends the cultivation of the native grapes of the United States, particularly the *Vitis sylvestris*, [*Vitis aestivalis*] or small blue or bunch grape; Bland's, Tasker's or Alexander's, and the bull-grape of Carolina and Georgia." It appears from the whole discussion by Mease and Bartram in this treatise that the only varieties of native grapes cultivated in 1804 were, Alexander's or Tasker's grape, Bland's grape, the Bull grape[2] of Carolina and Georgia, and the Raccoon grape.

Two years later, 1806, S. W. Johnson[3] and Bernard McMahon[4] pub-

had made arrangements for the publication of the first fascicle last year; but the very unfavourable season, which had prevented the ripening of the species (Bland's Grape) I had resolved first to describe, obliging me to defer the task until the present year, when I hope the weather will prove more favourable. Medical gentlemen, and others fond of natural history, and anxious to have the description of American vines and their classification completed, will have it much in their power to assist my undertaking. I have taken measures to have the *Bull* or Bullet grape of Carolina and Georgia sent me; but I shall nevertheless be much indebted for any specimens of the plant that may be transmitted."

[1] The same year, 1804, Mease published Bartram's paper, with some omissions, in the *Medical Repository* (Second Hexade, 1:19) under the heading, "Account of the Species, Hybrids, and other Varieties of the Vine of North-America. By Mr. William Bartram, of Pennsylvania." The same paper was again published in 1830 in Prince's *A Treatise on the Vine*, pp. 216–220.

[2] Bartram states that "bull" is an abbreviation of bullet; the grapes being so called because they were of the size of a bullet. He held that the name "*taurina*" applied to the species was not proper.

[3] *Johnson's Rural Economy:* 155–197. New Brunswick, N. J., 1806.

[4] *McMahon's Gardening:* 226–241. Philadelphia, Pa., 1806.

lished accounts of the cultivation of the vine. Johnson mentions three American varieties, the "Bull or Bullet grape, Bland's grape and the Alexander's or Tasker's grape." Johnson has nothing to say of the desirability of cultivating the above or other native sorts and confines his discussion largely to Legaux's work with European grapes. McMahon advocates the introduction of foreign grapes and says almost nothing about the native species. As American varieties he mentions those given by Johnson, omitting the Bull grape.

One of the first, if not the first, extensive centers of native grape-growing in America was about York, Pennsylvania. In 1818, Mr. Thomas Eichelberger, an enterprising German vine-grower, set out four acres of grapes at this place and demonstrated that grapes could be grown successfully. The original vineyard was increased to about twenty acres and other plantations were made until in 1826 there were in the immediate neighborhood of the borough of York one hundred and fifty acres of vineyards. The account of these vineyards states further:[1] "In Adam and Westmoreland the culture of the vine is also attended to and one gentleman in Chester has a vineyard of thirty acres." The grape most commonly grown in this region was known to the growers as "Black or York Madeira" and was supposed to have been introduced from the Island of Madeira. Prince pronounced the grape to be a native and the then commonly grown Alexander. Other popular sorts in this region were the York Claret, a native resembling Alexander; and York Lisbon, described as "having considerable affinity to Alexander but having a larger and more acid fruit." Beside these there were several less well known sorts none of which is heard of now. Before the industry began to wane about York the Catawba and Isabella had taken the place of the first named sorts and these eventually succumbed for most part to grape diseases. In looking up the history of varieties of grapes for this work, a surprisingly large number have been traced back to this early center of the industry, so many that York and Lancaster Counties, Pennsylvania, must be counted among the starting places of American viticulture.

We have seen that for some years previous to Johnson and McMahon

[1] *American Farmer*, 8:116. Baltimore, 1826.

there had been efforts to grow *Vitis vinifera* in many widely separated regions. The futility of attempting to grow the Old World grape became apparent, so far as we may judge from written accounts, to but few men, however. To Dr. James Mease must be accorded the honor of first perceiving and setting forth in print the fact that American viticulture must rise from native grapes. Possibly the second man to voice the same sentiment was Thomas Jefferson, ever alert for the agricultural welfare of the country, who wrote to John Adlum in 1809, speaking of the Alexander grape:[1] "I think it will be well to push the culture of that grape without losing time and efforts in search of foreign vines, which it will take centuries to adapt to our soil and climate." It is probable that Jefferson, who it appears was a frequent correspondent of Adlum's, stimulated the latter to the publication of a book on grape culture. This appeared in 1823, "for the purpose", as the author says in his preface, "of diffusing some practical and useful information throughout the country on the best method of cultivating the native grape and of making Wine".

Thus Adlum's[2] *Cultivation of the Vine* was the first American book on American grapes. The author's intentions, as indicated in his preface, quoted above, were good; but his book, as an exposition on native grape culture, is a failure. The work is concerned for most part with wine-making

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[1] Adlum, John. *Cultivation of the Vine:* 149. Second Edition, Washington, 1828.

[2] John Adlum, a native of Pennsylvania, was born in 1759 and died at Georgetown, D. C., in 1836. Adlum was one of the first men to see clearly the possibility of improving the wild grapes of America and of bringing them under cultivation. He published accounts of this fruit in his *Cultivation of the Vine* and in the agricultural papers of his time, thereby aiding in bringing it into public notice as a cultivated plant. At "The Vineyard", near Georgetown, he established an experimental plantation of grapes from which he distributed many vines, chief of which were those of the Catawba, a variety for whose dissemination he is largely responsible. Adlum tried without avail to have the national government found an experimental farm for the culture of grapes and his effort was one of the first to secure governmental aid in agricultural experimentation. Beside his work with the grape, Adlum was deeply interested in other phases of agriculture and in the scientific movements of his time. He was a soldier of the Revolution, a brigadier-general in the militia of Pennsylvania, a county judge, and a civil engineer and surveyor. In spite of his work in the early part of the last century for agriculture and for his State and country, Adlum was practically unknown to the present generation until a sketch of his life and work appeared in Bailey's *The Evolution of Our Native Fruits* from which this sketch is written. Adlum's memory is perpetuated in the name of the beautiful climbing fumitory of one of the Northern Atlantic States, *Adlumnia cirhosa*, bestowed upon him by his contemporary, Rafinesque. (For a more complete account of Adlum's life, see Bailey's *Evolution of Our Native Fruits*, pp. 50–61.)

and his cultural directions are taken almost wholly, such as they are, from European books. In the last four pages of the treatise he describes twenty-two varieties of grapes of which perhaps a dozen are native sorts. In this edition the Catawba is described as the Tokay but in a second edition, published in 1828, the name is changed from Tokay to Catawba. Adlum was one of the first to call attention to the Catawba and was at the time its chief distributor. He advocated in his book, and in the papers of the time, the establishment of an experimental farm[1] upon which could be grown "cuttings of the different species of the native Vine to be found in the United States, to ascertain their growth, soil, and produce, and to exhibit to the Nation, a new source of wealth, which has been too long neglected."

Adlum did not write from theory alone for he was the owner and cultivator of vineyards near Georgetown, in the District of Columbia, where he grew both native and foreign grapes. The latter he finally discarded with the statement that the way to success in America "is to drop most kinds of foreign vines at once (except a few for the table) and seek for the best kinds of our largest native Grapes". The best information from Adlum's pen regarding native grapes and their culture is to be found in the *American Farmer*, published in Baltimore. He wrote mainly during the years 1824 to 1830. He was neither a clear nor an accurate writer and his imagination and enthusiasm had full sway at all times; yet, notwithstanding these faults, he must be counted as one of the geniuses of his day, as devoted to the welfare of the country, as having almost a prophetic vision, and as actuated by the best of motives. His struggle for a national experimental vineyard, the work of his pen, his dissemination of the Catawba and other grapes, and his vineyard experiments, give Adlum a high place among the improvers of American grapes.

John James Dufour gives the next glimpse of the beginnings of American viticulture in his *Vine Dresser's Guide* published in Cincinnati in 1826. It is but a glimpse, however, for Dufour was a foreigner, and, as we have seen, came to America to grow the Old World grape. His efforts at grape-growing furnished the climax to the two centuries of failures in growing

[1] Adlum, John. *Cultivation of the Vine.* Preface. 1823.

Vitis vinifera in America but did not benefit the new viticulture of the country greatly.[1] His only contribution of note was one made in spite of himself, namely the introduction of the Alexander, which he incorrectly called Cape, an American grape, as a commercial variety, Legaux having first brought it prominently to notice. Dufour would never admit that this variety, the only one to succeed in his vineyards in Kentucky and Indiana, was a native grape and says of it in the preface of his book: "I will also try to save the character of our Cape grapes from being made merely wild grapes, because some are now found in the woods; and, to put any one in the way to distinguish wild from tame grapes, I will give the description of the botanical characters of the blossom of both sorts." In his text he fulfills the promise in the preface and devotes some pages to "save the character of our Cape grapes."

Dufour's visit of inspection of the vineyards of the country in 1799 has been noted in discussing the Old World grape. In this trip only foreign grapes interested him and he mentioned the wild species but to condemn them for cultivation. In his book published twenty-seven years later he shows no change of opinion and though at this time there were a number of meritorious native sorts he describes only European varieties. Dufour was a true foreigner and could find little of value in the New World that did not come from the Old World.

Rafinesque, writing in 1830, in his *American Manual of the Grape Vines*, gives an account of forty-one species of native grapes. Unfortunately his "species" are founded upon the slightest differences in vine or fruit and his observations were so poorly made that his botanical studies of the grape are now wholly discredited by botanists. He gives an account of the acreage in vineyards existing in the United States in 1825 and 1830. This is the earliest estimate of the vineyard acreage of the country and is therefore a landmark in American viticulture. It is as follows:[2] "In 1825 I collected an account of our principal vineyards and nurseries of vines. They were then only 60 of 1 to 20 acres each, altogether 600 acres. While

[1] For a full account of Dufour's attempts to grow European grapes see Bailey's *Evolution of Our Native Fruits*, pp. 21–42.

[2] Rafinesque has also preserved for us the names of many of the vine-growers of his time. The following is his list:

now, in 1830, they amount to 200 of 3 to 40 acres, or nearly 5000 acres of vineyards. Thus having increased tenfold within 5 years, at which rate they promise to become a permanent and increasing cultivation."

Viticulture took its place in the literature of American pomology with the advent of William Robert Prince's *A Treatise on the Vine*. This work, magnificent compared with similar books of the time, introduces native grapes to the fruit-growers of America. Prince was the fourth proprietor of the same name of the Prince nurseries at Flushing, Long Island, and he with his predecessors had assiduously cultivated European varieties of grapes hoping to acclimatize them to American conditions. It is not a matter of wonder therefore, that much of his book is devoted to foreign grapes. His collection at Flushing consisted of over four hundred and fifty sorts and many of these he describes. In spite of his attraction to the foreign varieties, some of which had been tested in his nursery for two or three generations, Prince admitted the impossibility of growing them successfully and recommends to his readers and patrons the cultivation of native varieties. In the latter regard he says: "* * * after all my own experiments I have come to this conclusion, that to establish vineyards of the most profitable description, with a certainty of regular crops in localities north of the highlands in this state, *native varieties alone should be selected;* and the whole of the eastern states will of course be comprised in this remark."

" Wishing to preserve the names of the public benefactors who had in 1825 established our first vineyards, I herewith insert their names. They are independent of the vineyards of York, Vevay, and Vincennes.

" In New York, George Gibbs, Swift, Prince, Lansing, Loubat, etc.

" In Pennsylvania, Carr, James, Potter, J. Webb, Legaux, Echelberger, E. Bonsall, Stoys, Lemoine, Rapp.

" In Delaware, Broome, J. Gibbs, etc.

" In Maryland, Adlum, W. Bernie, C. Varle, R. Sinclair, W. Miles, etc.

" In Virginia, Lockhart, Zane, R. Weir, Noel, J. Browne, J. Duling, etc.

" In Carolina, Habersham, Noisette, etc.

" In Georgia, Maurick, James Gardiner, S. Grimes, Checteau, M'Call.

" In New Jersey, Cooper at Camden. Another at Mount Holly.

" In Ohio, Gen. Harrison, Longworth, Dufour, etc.

" In Indiana, Rapp of Harmony, the French of Vincennes.

" In Alabama, Dr. S. Brown, at Eagleville."

Continuing, he gives an idea of grape production in 1830:—

In his treatise, Prince described about seventy varieties of native grapes and several of the native species. Prince's descriptions of these grapes are comprehensive and judging from the sorts described by him which we now have they are accurate. He grew seedlings from many of them. He showed a knowledge of the possibilities of hybridization of American species with *Vitis vinifera*. He solicited and obtained seeds and vines from all the settled portions of the Union. His grape correspondents in different parts of America and of the world must have numbered hundreds. Prince's enthusiasm and perseverance in grape culture attached to him votaries in all fruit regions and to him more than to any other man was due that friendly interchange of knowledge and sentiment regarding grapes which characterized the half century after the appearance of his book. Such co-operation as was manifested in grape-growing in the second and third quarters of the nineteenth century has never been known in the culture of any other species of plant in this country and to it is largely due the progress of viticulture in leaps and bounds dating from Prince's time.

With the close of the year 1830, we may consider viticulture a firmly established industry in America with the native grapes as a basis. Rafinesque's estimate of the acreage at this time is given on a preceding page (47). It is worth while considering, very briefly, the types of grapes under cultivation at this stage of the industry, with some discussion of the origin of the leading varieties.

"The average crop of wine with us is 300 gallons per acre. At York, where 2700 vines are put on one acre, each vine has often produced a quart of wine, and thus 675 gallons per acre, value $675 in 1823, besides $200 for 5000 cuttings. One acre of vineyard did then let for $200 or 300, thus value of the acre about $5000: This was in poor soil unfit for wheat, and for mere Claret.

"Now in 1830, that common French Claret often sells only at 50 cents the gallon, the income must be less. I hope our claret may in time be sold for 25 cents the gallon, and the table grapes at one cent the lb. and even then an acre of vineyard will give an income of $75, and be worth $1000 the acre.

"The greatest check to this cultivation is the time required for grapes to bear well, from 3 to 6 years: our farmers wishing to have quick yearly crops; but then when a vineyard is set and in bearing, it will last forever, the vines themselves lasting from 60 to 100 years, and are easily re-placed as they decay.

"The next check is the precarious crops if badly managed. Every year is not equally plentiful, and sometimes there is a total failure when rains drown the blossoms; but an extra good crop of 500 or 600 gallons commonly follows and covers their loss." Rafinesque, C. S. *American Manual of the Grape Vines.*, Philadelphia. 1830. pp. 43–45.

The first grape to become generally distributed as a commercial variety, was, as has been remarked before, the Alexander, or Cape. It came into prominence, through the deception of Legaux and the credulity of Dufour, as one of the Viniferas commonly grown at the Cape of Good Hope. It proved, however, to be an offshoot of the fox grape of the woods, *Vitis labrusca*, and had been grown, long before Legaux palmed it off as the Cape, under the names Alexander and Tasker's, Alexander because of its having been grown by a gardener of this name and Tasker's through its cultivation on a somewhat extensive scale by a Mr. Tasker in Maryland. Its history dates back to the years before the Revolutionary War and its origin was probably on the banks of the Schuylkill in Pennsylvania, hence another of its many synonyms, Schuylkill Muscadell.

Of the several other native varieties of the Labrusca type cultivated in 1830, two deserve attention for their intrinsic and historical value. The Catawba, of uncertain origin, as we shall see in its history, and the Isabella, a native of South Carolina, are both classed by most viticulturists as of the fox or Labrusca type. The two varieties were distributed among vine-growers at about the same time but the Catawba, because of its superior merits, soon took the lead and at the time of which we write was by far the most popular native grape. These, with the Alexander, may certainly be considered the forerunners of the cultivated grapes of the species to which they belong. The Catawba is still in several great grape regions of the country the standard commercial variety.

While varieties of *Vitis labrusca* were first cultivated in the North, it is probable that *Vitis rotundifolia* furnished the first domesticated varieties for the South, and likely, too, before the northern kinds were cultivated. Among these are the white and black Scuppernongs, or bullet grapes. *Vitis rotundifolia*, while it refuses to grow out of its habitat, runs riot from Maryland to Florida from seashore to mountains and in many diverse soils. The Scuppernongs[1] are natural offshoots of this species and are known in

[1] Tradition relates that the first Scuppernong vine known by civilized man was found on the coast of North Carolina by Amadas and Barlowe in 1584 and was transplanted by them to Roanoke Island. An old vine of great diameter of stem and spread of vine, gnarled in trunk and branch, evidently of great age, is known as the " Mother Scuppernong " and is supposed to be the vine transplanted in 1584.

the South in legend, tradition and history. Undoubtedly they were cultivated for their fruit or as ornamentals in garden or vineyards from the earliest colonial times. It is certain that wine was made from the different wild types of *Vitis rotundifolia* from the settlement of Jamestown and if not brought under cultivation at an early day it was because the bountifulness of the wild vines obviated the necessity of domesticating them. It was of this grape that Amadas and Barlowe wrote in 1584 "in all the world the like abundance is not to be found."

The word Scuppernong[1] is often used to designate a group of grapes rather than as a varietal name; for, there are the black Scuppernong, the white or green Scuppernong and the red Scuppernong, all much alike except in color of fruit and in a few minor characters of vine. Indeed, where *Vitis rotundifolia* grows wild, all of the forms are often included in the term Scuppernong. The species is often known, too, as the Muscadine or Southern Muscadine.

While the Labruscas were becoming established in the North and the Scuppernongs in the South, two other species, one northern and one southern, came into prominence with varieties which for wine-making at least were far superior to any other native sorts. The southern species is *Vitis aestivalis*, best represented then and now by Norton while the northern species is *Vitis riparia* and its variety under cultivation was the Clinton, which still remains one of the best representatives of the species.[2] It is strange that these four species were brought under cultivation only when wild forms of them, so striking in value that they still remain a hundred years later standard cultivated varieties, had been found. *Vitis labrusca* represented by Catawba, *Vitis rotundifolia*, by Scuppernong, *Vitis aestivalis*, by Norton, and *Vitis riparia*, by Clinton, are, after a century of improvement, with several hundred varieties, scarcely excelled by others

[1] Calvin Jones writing June 17, 1817, in the *American Farmer*, 3:332, from Raleigh, North Carolina, gives the following account of the name Scuppernong: "This grape & wine, had the name of Scuppernong, given to them by Henderson & myself, in compliment to Jas. Blount, of Scuppernong, who first diffused a general knowledge of it in several well written communications in our paper — and it is cultivated with more success on that river, than in any other part of the state, perhaps, except the Island of Roanoke." It is worthy of note that Scuppernong is largely a sea-board name for *Vitis rotundifolia* and is not commonly applied to it outside of the Atlantic States.

[2] There is some evidence to show that the Clinton contains Labrusca blood.

of their species. Yet it is not so much the wonder that grape-breeders have so little improved upon these first varieties, as that our forefathers could allow them to grow comparatively neglected at their doors for two centuries while they wasted time in the attempt to grow a foreign grape that had been a failure from the very start.

Other species had also been tried at this time. Those indefatigable botanists and horticulturists, the Princes, had grown plants of what we now know as *Vitis aestivalis linecumii* Munson, *Vitis longii* Prince, and *Vitis cordifolia* Michx., but without finding them of value. It is interesting to note that the first named species, the Post-oak grape, now promises to furnish valuable varieties for the South and that it has some characters desirable for the North if they can be combined with those of our northern species.

We have followed the grape through the settlement, colonization and first statehood days of the United States. We have seen that it had its part, and no mean one, in these dramatic periods. We have found that the wild grapes of the country, valued but uncultivated for two hundred years, became through mere transplanting from the woods into the vineyards, without the slow modifications which nearly all other plants have had to undergo, one of our most important fruits. The domestication of four species of American grapes has been briefly traced. The beginning of American viticulture has been set, somewhat arbitrarily, at 1830, the date of the publication of William Prince's *Treatise on the Vine*. It remains now to discuss the economic progress of the industry we have seen launched.

The twenty years following 1830 comprise a period of expansion in grape-growing unmarked by the introduction of new types or of any new varieties of particular note. During this time a grape and wine industry of considerable magnitude was developed about Cincinnati, and the Ohio River became known as the Rhine of America—a title long since lost and now applied to the Keuka Lake region in New York. According to Buchanan,[1] there were 1550 acres of grapes in the Ohio Valley within twenty miles of Cincinnati; between forty and fifty acres near Hermann, Missouri; a few

[1] Buchanan, Robert. *Grape Culture:* 61. 1850.

vineyards at Belleville, Illinois; and wine was being made from the Scuppernong grape in North and South Carolina. The inference from Buchanan is that the above plantations were for the production of wine; for he specifies that a few vineyards were in cultivation about New York, Philadelphia and Burlington, New Jersey, "but more with a view to supply the market with grapes, than to make wine."

The last statement is significant for it indicates a change in the grape industry which really gave life to the viticulture of eastern America. Until about 1850, grapes were considered valuable and were cultivated only for wine-making. Previous to this time the literature on the grape was concerned more with wine-making than with cultivation, varieties or any other phase of the industry. The American grapes, with few exceptions, do not make good wines; there were few men in the country until within recent years who understood wine-making; and the American people do not take kindly to wines. It was not, therefore, possible to establish viticulture as an industry of any magnitude in eastern America when grapes were used for wine alone. It was only when the demand for table grapes was created and when transportation and market facilities permitted the supply of the demand that the industry took form and substance. It is a significant fact that in those regions in the eastern United States in which grape-growing has been founded and which are chiefly dependent on wine-making, the industry has not prospered or has flourished but temporarily.

We have had Rafinesque's survey of the grape industry of the country in 1830 and Buchanan's in 1850. The next record, and a far more complete one than either of the above, is found in a consular report made by E. M. Erskine, Secretary of the British Legation at Washington, to the British government in 1859. Mr. Erskine reported the acreage as follows:[1] "The banks of the River Ohio are studded with vineyards, between 1,500 and 2,000 acres being planted in the immediate vicinity of Cincinnati, with every prospect of a vast increase. At Cleveland, Ohio, on the southern shore of Lake Erie, there are 100 acres under vine culture; at Hermann, on the Missouri, 80 miles west of St. Louis, 150 or 200 acres are cultivated almost entirely by Germans; at Booneville, higher up the same river; at

[1] British Parliamentary Papers (Library of Congress), Vol. 30. 1859.

Belleville, on the ' rolling prairies ' of Illinois; at Reading, in Pennsylvania; in Kentucky, Indiana, Tennessee, Arkansas, and generally, in at least twenty-two out of the thirty-two States now constituting the Union, vineyards of more or less promise and extent have been planted. * * *

"About 3,000 acres are cultivated as vineyards in the state of Ohio; 500 in Kentucky; 1,000 in Indiana; 500 in Missouri; 500 in Illinois; 100 in Georgia; 300 in North Carolina; 200 in South Carolina, with every prospect of a rapid increase in all. It is calculated that at least 2,000,000 gallons of wine are now raised in the United States, the average value of which may be taken at a dollar and a half the gallon."

Grape-growing in New York was not considered worthy of mention by Erskine; and Buchanan nine years before reported only a few vineyards about New York City. In the regions of this State now almost wholly devoted to grape-growing a start had hardly been made in 1850. Yet there were some commercial vineyards at this time. Deacon Elijah Fay, the pioneer grape-grower in what is now the great Chautauqua region, planted the first vines in that district in 1818 and though grape-growing did not become of importance until three or four decades later yet this planting was the foundation upon which Deacon Fay built until, largely through his efforts and example and those of his children, grapes were grown everywhere about his home. It is doubtful, however, if there were a hundred acres of commercial vineyards in this region when Erskine made his report in 1859.

The first plantings made about Keuka Lake, now called the " Rhine of America ", were made by the Rev. William Bostwick at Hammondsport about 1830. He grew the Catawba and Isabella in a small way in his garden and for years was the only grape-grower in this part of New York. The commercial industry in this region was not started until 1853 when Andrew Reisinger, a German vintner, planted two acres of Isabellas and Catawbas at Harmonyville in the town of Pulteney. From this start viticulture in the Keuka region grew apace and there must have been four or five hundred acres of grapes planted when Erskine's report was made in 1859. The fact that the region was not mentioned in this report may be accounted for by assuming that Erskine's figures came from men engaged in making

wine and at this time wine was not made in large quantities in the Keuka district.

There had been experimental vineyards about New York City and along the Hudson for a century before the time of which we are writing, but these, as we have seen, being largely of foreign grapes, came to naught. Probably native grapes were first planted there in a commercial way by the French Huguenots who settled in Ulster and Orange Counties. At any rate there is record of a vineyard planted by a Frenchman, John Jacques, near Washingtonville in 1837. The varieties were Isabella and Catawba and there were, all told, about half an acre. It is interesting to note that this vineyard is still producing grapes and that some of the vines are as vigorous as in their first maturity. Wine-making as an industry has existed in this region since the vineyard of 1837 came into bearing but it was not until several years later that table grapes were grown for the market. In 1859 there must have been two or three hundred acres of grapes in commercial vineyards in the country adjacent to the Hudson.

Adding five hundred acres from New York to the 6500 reported for the United States by Erskine in 1859 we have 7000 acres for the whole country — a small estimate, for several other states known to have considerable acreages of commercial vineyards were not taken into account in Erskine's survey.

Before passing to a further consideration of grape statistics we must note two important events for American viticulture which took place just previous to the survey which we have been discussing. One of these brought about a revolution,— almost brought into existence commercial grape-growing; the other stimulated and laid the foundation of grape-breeding in this country. The first was the introduction of the Concord grape; the second was the production of hybrids between the European and the native grapes.

The history of the Concord will be found in the discussion of that variety in the chapter on *Varieties of American Grapes*. Its advent is noted here that it may be set as a landmark in the development of American grape-culture. It is first recorded in 1852 by the Massachusetts Horticultural Society as a seedling exhibited by E. W. Bull. The qualities that have made the Concord so important in commercial grape-growing are:

Adaptability to varying sets of cultural conditions; fair shipping qualities; hardiness, productiveness and comparative immunity to fungi and insects. Its influence on the grape-growing of the country has been great, too, because from it have come a considerable number of the most valuable varieties of American grapes; as Worden, Moore Early, Pocklington, Martha and Cottage, all pure-bred seedlings and many cross-breds.

At a meeting of the American Pomological Society in Philadelphia in 1852, Dr. William W. Valk of Flushing, Long Island, exhibited several bunches of fruit from a seedling grape which he had grown from seeds of Black Hamburg produced from blossoms fertilized by Isabella.[1] The cross had been made in 1845, the first fruit was borne in 1850, and in 1851 specimens of it were examined by Downing who wrote, "There can be no doubt that this is the first genuine cross between the foreign grapes and our natives."[2] The name of the variety, given by the originator, is Ada. Dr. Valk gave full accounts of his hybrid seedlings in the *Horticulturist* in 1851,[3] and in the *Proceedings of the American Pomological Society* in 1852.[4] He had previously written on the subject of hybridization, an interesting paper having been contributed to Hovey's *Magazine* as early as 1845.[5] All available information shows that Valk's is the first recorded hybrid between a native and the foreign grape. Yet the honor of such a production has usually been given to John Fisk Allen and to the grape, Allen's Hybrid. For the conception of hybridity between species we can go back to the beginning of the cultivation of native grapes. Nearly thirty years before, Nuttall, the then famous botanist of Harvard University, had recommended such hybridization to American grape-growers.[6] Dufour mentions its possi-

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[1] *American Pomological Society Report* for 1852:45.

[2] *Horticulturist*, 6:445. 1851.

[3] *Horticulturist*, 6:444. 1851.

[4] *American Pomological Society Report* for 1852:45.

[5] *Magazine of Horticulture*, 11:134. 1845.

[6] Nuttall says: "It is probable that hybrids betwixt the European Vine (*Vitis vinifera*) and those of the United States would better answer the variable climates of North America, than the unacclimated vine of Europe. When a portion of the same industry shall have been bestowed upon the cultivation of the native vines of America, which has for so many ages and by so many nations, been devoted to the amelioration of *Vitis vinifera*, we cannot imagine that the citizens of the United States will be longer indebted to Europe for the luxury of wine. It is not however in the wilds of

bilities in his *Vine Dresser's Guide*.[1] In 1830, Prince discussed the whole matter and gave specific directions for hybridizing.[2] Indeed it is not unlikely that Prince, who says he grew ten thousand seedling plants "from an admixture under every variety of circumstance" grew the first such hybrid but we have nothing more definite as to this than the above statement.

In 1854, two years following its report of E. W. Bull's "new seedling," the Concord, the Massachusetts Horticultural Society showed in its exhibits another grape scarcely less worthy of note than the Concord. It was a hybrid between the Golden Chasselas and the Isabella produced by John Fisk Allen of Salem, Massachusetts. The new variety, the Allen's Hybrid, mentioned in a preceding paragraph, had some intrinsic value but, of more importance, was the first introduction of its kind and started similar work which gave us many interesting and some valuable grapes.

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uncultivated nature that we are to obtain vines worthy of cultivation. Were this the case, Europe would to the present have known no other Malus than the worthless austere crab, in place of the finest apple; no other Pyrus than the acerb and inedible Pyraster or stone Pear, from which cultivation has obtained all the other varieties. It is from seed that new and valuable varieties are invariably to be obtained. There is however at the present time, a variety of one of the native species cultivated under the name of 'Bland's grape', a hybrid no way in my opinion inferior to some of the best European grapes."

[1] "People who have a good deal of leisure time, ought to make those experiments which take many years to know the result. If any where in the United States a public Botanic garden should be established, there would be the proper place, to have a corner of it appropriated solely for the purpose of trying the raising of new species of grapes, either by seeds or grafts; and if there was a green or hot house, several species of the best grapes, and even a male plant of the most vigorous indigenous ought to be introduced in it, and trained so that the crossing of the breed may be easily done, by bringing two different sorts of grapes together in time of blossoming, and sow the seeds. I think we may anticipate some very good results from such an arrangement." *Vine Dresser's Guide:* 228. 1826.

[2] Of hybridization he says: "In all attempts at artificial fecundation, I would recommend that one of the varieties selected be of native origin, as there exists no want of hybrids between European varieties alone; a large proportion of those now in cultivation having been doubtless produced by natural admixture of the pollen, in the vineyards where they originated. For the purpose of hybridizing, the varieties of *Vitis aestivalis* should be selected in preference to those of *Vitis labrusca*, on account of the much higher vinous properties of the former; and there cannot exist a doubt but that we may readily produce well acclimated hybrids between the native and foreign varieties, without the trouble of continuing the course of reproduction for many generations, although such reproduction from species so dissimilar may continue to present additional modifications of character." *A Treatise on the Vine:* 253–254. 1830.

Soon after the production of Allen's Hybrid, E. S. Rogers of Salem, Massachusetts, and J. H. Ricketts of Newburgh, New York, began to give grape-growers varieties, the results of hybrids between *Vitis vinifera* and *Vitis labrusca*, so promising that for a time enthusiasm and speculation ran riot. Possibly at no other period has the interest in grape-growing been so keen as during the decade succeeding the introduction of these hybrids. It was the "golden era" for the grape propagators. One old nurseryman tells of carrying, during this boom, over a thousand dollars worth of rooted grape cuttings on his back from the nursery to the express office.

Though there was no panic among grape-growers as the result of speculation in hybrids, lovers of grapes the country over were greatly disappointed in the hybrid varieties. The fruit of many of the hybrids produced at this time is of superior quality and many of them are still grown by amateurs. But the vines of all first generation hybrids with Vinifera produced so far, lack hardiness, vigor and usually productiveness; they are susceptible to fungi and the phylloxera and many of them must be cross-pollinated to secure fruit. It is only when the blood of the native species greatly predominates, as in Delaware, Brighton and Diamond, that we have obtained sorts of commercial value through the admixture of foreign blood. But the interest aroused by Allen's Hybrid still continues and in every part of the country may be found some man who hybridizes grapes with the hope that through well planned crosses or a lucky chance he may obtain the grape of grapes for America. Such attempts, stimulated by the hybrids of the fifties, have produced most of our American varieties.

The time between 1853, the date of the introduction of the Concord, and 1880 can be singled out as the period in which viticulture made its great growth in eastern America. The first limit is set because the Concord gave commercial grape-growing its initial impulse; the second limit is put at 1880, because at about that time grapes and wine from California began to compete with the eastern product to such an extent that prices fell and plantings were curtailed. Curtailment did not begin so early as this in New York but for the country at large the period of great expansion ended at about 1880. Fortunately we have an accurate statistical report of the

condition of grape culture in the United States at this time. It is found in a work entitled, *A Report Upon the Statistics of Grape Culture and Wine Production in the United States for 1880.*[1] The report was compiled by Dr. William McMurtrie under the direction of the Commissioner of Agriculture.

Statistics are given for all of the states of the Union but a glance at the tables shows that by this time viticulture had become a specialized industry and that the areas devoted to it are more or less localized. The main areas, with their acreage for 1880, may be set forth as follows:

The Eastern region, comprising the States of New York and Pennsylvania, 14,590 acres.

The Middle region, Ohio, Indiana and Illinois, 17,634 acres.

The Western region, Kansas and Missouri, 10,918 acres.

The Southern region, Kentucky, Tennessee, Virginia, North Carolina and Georgia, 10,707 acres.

The Pacific region, California, Arizona and New Mexico, 35,518 acres.

Outside of these five regions there were in the United States, according to McMurtrie's report, 12,316 acres. The total acreage for the United States in 1880 was 101,683 acres; the production of wine was 23,453,827 gallons. Unfortunately the total production of grapes is not given.

The following data are taken from the agricultural statistics of 1890 and show well the growth of viticulture in ten years though it is probable that the figures for 1880 were far too low. For the Eastern region, 51,000 acres; the Middle region, 42,633 acres; Western region, 17,306 acres; Southern region, 17,092 acres; Pacific region, 213,230 acres; for the territory outside of these divisions, 60,000 acres. Total area, 401,261 acres. Excluding the acreage of the Pacific division we have 188,031 acres for American grapes, assuming that all of the grapes grown on the Pacific Coast belong to *Vitis vinifera*.

It is interesting to note that in 1890 four-fifths of the grapes grown in the Eastern region, New York and Pennsylvania, were for table use and that in round numbers the production for this purpose amounted to 60,687 tons, requiring 5000 cars for transportation. Of grapes sold to wineries there

[1] U. S. Dept. of Agriculture. Special Report, No. 36. 1880.

were 15,172 tons. The varieties most largely grown were, in order named, Concord, Catawba, Delaware, and Niagara.

In the Middle region, Ohio, Indiana and Illinois, about half the grapes grown were for table use and half for wine. By far the largest part of the grapes grown in this region was in Ohio, only about one-fourth of the total area being in the other two states. Between 1880 and 1890, viticulture scarcely held its own in this division. The decrease in the value of the product, competition with California, and, more particularly, ravages of insects and fungi were the causes of the falling off in planting. In some localities many vineyards were destroyed. The grapes sold for table use in this region amounted to 50,337 tons; to wineries, 14,456 tons.

So, too, in the Western region, Missouri and Kansas, but little progress was made during this ten years and for the same reasons, though the devastation in Missouri was caused chiefly by black-rot, which begun to be troublesome about 1875. The plantings in Missouri were largely for wine-making but in Kansas, which contained 5542 of the 17,306 acres for this region, about half of the crop was sold for table use. The grapes for table use in this region amounted to 30,794 tons, for wineries, 8290 tons.

The crop in the Southern region was about equally divided between wine and table grapes, the production in 1889 amounting to 1,165,832 gallons of wine and 14,539 tons of table grapes. The new plantings about equalled the acreage destroyed so that in total area the region was about holding its own. The chief market for the table grapes was in the North where they were sold early in the season at prices ranging from fifteen to twenty-five cents a pound.

We are concerned with the Pacific region in that its grape products, especially its wines, compete with those of eastern America. The growth of viticulture in the Pacific region in the decade we are discussing was little short of marvelous. In 1880 the acreage was 35,518 acres and in 1890, 213,230 acres—much greater than that of all the eastern regions, and the production of grapes being more than proportionately greater because of the greater productiveness of the vines. In this region 43,414 tons were sold for table grapes; 173,037 tons for wine; 41,166 tons were made into raisins and 23,252 tons used for dried grapes and other purposes than

table grapes. The grand total for the region was 280,869 tons against 201,270 for all of eastern America. These figures give an idea of how formidable a competitor to eastern America California had become by 1890.

The census of 1900 shows but little increase in the total production of American grapes. A few figures will show the relative status of viticulture in the several regions in 1890 and 1900.

	1890 Tons of grapes grown	1900 Tons of grapes grown
Eastern region	75,859	147,411
Middle region	64,793	58,917
Western region	39,084	14,784
Southern region	21,534	16,886
California region	280,869	362,323

All of the regions we have been discussing, in which native grapes are grown, show a considerable falling off in production excepting the eastern one where the increase more than counterbalances the decrease in the other regions. The census report for 1900 shows three new states in the list of those producing grapes in commercial quantities. In the decade preceding, Michigan came up from an insignificant commercial production in 1890 to fifth rank in 1900 with 20,765 tons. Iowa and Oklahoma, states from which grapes were not reported in commercial quantities in 1890, produced 3701 and 3055 tons in 1900.

The shifting of grape areas indicated in the above paragraph was caused for most part by the grape diseases. The mildew and rot had ruined the grape industry in some of the older regions. The newer regions, as in Michigan, either enjoy comparative immunity from these troubles or the vineyards had not yet been attacked by them. In the case of the eastern region, New York and Pennsylvania, in the Chautauqua district, along the shores of Lake Erie in both states, where the production increased greatly during this decade, the vineyards are almost wholly immune to black-rot and are comparatively free from the mildew. In the other grape districts of this region these troubles are kept well in check by spraying.

The statistics given in the last few paragraphs show how greatly the grape-growing of eastern America has increased in the last half century. When one considers that at the time Erskine made his survey in 1859 there were but 6100 acres of grapes in the whole of this great region and that the culture of the European varieties was impossible, the total acreage grown in 1900, namely, 237,998 acres, makes an astounding figure. The results achieved seem all the greater when one considers that many of the best varieties now grown are the first and scarcely any are further removed than the second generation from wild plants. It is doubtful if any other cultivated plants have attained such importance as our native grapes in so short a time from the wild state. Yet their domestication has scarcely begun and few who grow them realize their possibilities.

THE WINE[1] AND GRAPE JUICE INDUSTRIES.

For over 200 years the grapes grown on this continent were almost wholly for wine-making. Yet the production of grapes was not sufficient

[1] Wine is the fermented juice of the grape. When the juice or must of the grape is exposed to temperatures ranging from 55° to 65°F. the micro-organisms which accompany the fruit, the yeast of the wine-maker, are transformed from a comparatively dormant state to one of great activity. The action of the organisms on grape must is called fermentation and through it certain physical and chemical changes take place whereby the must is changed in taste and in color, and a part or all of its sugar is changed into alcohol. The methods of making wine differ in different countries and in different localities depending upon the climate, kind of grapes grown, condition of growth, and the kind of wine produced, yet the principles and chief processes are much the same and may be briefly described as follows:

In general grapes are not picked for wine-making until they have reached full maturity thus insuring a higher sugar content, richness of flavor and perfect color. It is customary to determine the composition of the must as to sugar and acid content by various instruments devised for the purpose and if it lack sugar this ingredient is added; if it be too acid water is added; or the composition may be otherwise changed depending upon a number of circumstances though manifestly reputable wine-makers change the natural grape juice as little as possible. Soon after harvesting the grapes are crushed. The ancient method, which still prevails in many parts of Europe, was to tramp the grapes with bare feet or wooden shoes. Tramping is for most part superseded by mechanical crushers which break the skins but do not crush the seeds. For some wines the stems of the grapes are removed; for others it is essential that the grapes be not stemmed. Stemming may be done by hand, by a rake over a screen, or by specially devised machines. If white wine is to be made the juice is separated from skins and pulp at once; if red wine is desired fermentation takes place in the crushed grapes or marc.

Fermentation is carried on in large tanks or vats varying in capacity from 1000 gallons to 10,000 gallons or more. Some wine-makers prefer open vats, others keep them closed. The duration of

to sustain a wine industry until the middle of the nineteenth century. When, with the introduction of new varieties of grapes and of better methods of growing them, the crop became sufficient in volume to support wine-making as an industry, its progress was checked by the enormous demand for table grapes, a demand not known in other countries, and by the cheapness of California wines. Furthermore the grapes most commonly cultivated, as the Concord, Worden and Niagara, do not make good wines; and knowledge and facilities for wine-making have not been such that the best wines could be made with varieties adapted for the purpose. All of these obstacles, to which we may add the fact that Americans are not a wine-drinking people, have prevented the building up of a wine industry as it exists in other grape-growing countries.

Although the United States stands second or third in the list of grape-producing countries it took lowest rank in wine production in 1900, falling

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fermentation depends upon many conditions and varies from two or three to fifteen or twenty days, depending upon the amount of sugar in the must, the temperature, activity of ferments, etc., etc. Wine-makers observe several distinct stages of fermentation which must be closely watched and controlled. A most important influence is exerted on fermentation by temperature. The limits below which and above which fermentation does not take place are 55° and 90°F. In general it is desirable that fermentation take place at temperatures ranging about 70°. When it is found that the sugar is practically all converted into alcohol, or that such conversion has proceeded far enough, the new wine is drawn or pumped from the fermenting vats into casks or barrels where it ages though it may require special treatment for clearing. Before bottling it is usually necessary to rack the wine into new barrels twice or three times to stop secondary fermentations which invariably take place.

Special treatments result in several distinct classes of wine. Thus we can divide wine into *red* and *white* as to color. Red wines are produced from colored grapes the color being extracted in the process of fermentation. White wines are made from light colored grapes or if from colored fruit the must is not allowed to ferment on the marc and so extract the color. We may again divide wines into *dry* and *sweet*. Dry wines are those in which the sugar is practically all converted into alcohol. Sweet wines are those which retain more or less sugar. These are often fortified by the addition of alcohol. A third division is that of *still* and *sparkling* wines. Still wines are those in which the carbonic acid gas formed by fermentation has wholly escaped. Sparkling wines retain a greater or less amount of this carbonic acid gas.

All of the above classes are further divided into well marked types according to their color and taste, their alcoholic content, and the countries in which they are produced. The following are the leading wines made from native grapes: *Catawba*, *Delaware*, *Concord*, *Norton's Virginia*, *Ives*, *Scuppernong*, *Iona*, *Claret*, *Port* and *Champagne*. Of these *Claret*, *Norton's Virginia* and *Ives* are red dry wines. *Catawba*, *Delaware*, *Iona* and *Scuppernong* may be either dry or sweet white wines. *Port* is a red sweet wine.

below the small countries of Greece and Switzerland and such comparatively undeveloped countries as Chili and Argentine. Since by far the greater proportion of American wines come from the European grapes of the Pacific coast, it can be seen that wine made from American grapes is but a drop in the bucket in the world's production. Reliable statistics of viticulture in the United States were not taken until 1890, but careful estimates, as we have seen, had been made by several men at different periods. These with the last two census reports show the output of wine in this country to be, in round numbers, as follows:

	Gallons
1850	250,000
1860	500,000
1870	5,000,000
1880	15,000,000
1890	24,000,000
1900	30,000,000

According to the *American Wine Press*,[1] the leading authority on wines in this country, the vintage of 1907 shows the following figures:

	Gallons
Southern States	1,000,000
New Jersey	250,000
New York	4,000,000
Ohio	2,500,000
Missouri	1,500,000
California, dry	30,000,000
" sweet	10,000,000
Western States	500,000
All other States	500,000
Total wine yield	50,250,000

Subtracting the product of California from the total we have approximately the yield of wine from native grapes.

[1] Vol. 22: No. 3:22.

The manufacture of champagne[1] from native grapes is beginning to be an important adjunct to grape-growing and is of especial importance in New York which is the chief seat of the new industry. According to statistics from the Bureau of Statistics of the Department of Commerce and Labor,[2] more than two million bottles of genuine champagne wine are now produced annually in the United States. The figures compiled by the Bureau of Statistics show that the manufacture of champagne has quadrupled in ten years and that New York is by far the largest producer in this class of wines. It is held by the writers of the circular quoted above, and a careful study seems to have been made of the subject, that the American product compares favorably with that produced in other countries and that native champagnes are steadily improving with the increased experience of the American producer.

The largest manufacturers of champagne are located about Keuka Lake, Steuben County, New York. About 75 per ct. of the total output of the country is manufactured here. The process used is the French one of fermentation in the bottle and a number of distinct brands are made which in color, taste, sparkle and purity are rapidly approaching the high quality of the celebrated French champagnes. Considerable champagne is

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[1] Champagne obtains its name from the fact that it is chiefly produced in the Province of Champagne in France. Its special characteristic is that during fermentation, which is usually brought about in the bottle, the carbonic acid gas generated is absorbed by the wine. When the bottle is opened the gas is disengaged and the wine effervesces or "sparkles". Good champagne requires grapes of high quality and of special adaptability; the fruit must be well ripened, free from decayed berries, and clean. The first fermentation takes place during a period of several months in the regular receptacles for this purpose after which the wine from several varieties of grapes is blended. Good champagne usually contains some old wine. After bottling, the wine is held at slightly different temperatures for varying lengths of time to secure proper fermentation in the bottle until at the end of several months it is held at a comparatively low temperature in which the bottles remain from three to four years. The bottles must then receive some treatment which will remove the sediment which has been formed by fermentation. This is usually done by placing them in racks cork down at about an angle of 45 degrees or a little more. By dexterously shaking and jarring the bottles the sediment is loosened and deposited in the neck of the bottle. Lastly the sediment is disgorged by skillfully withdrawing the cork, a small portion of the wine being wasted in the operation. The bottles are then filled with a dosage of rock-candy dissolved in an old dry wine, the amount used determining the sweetness of the champagne. The bottles are then corked, wired, capped, labelled and cased, after which the champagne is ready for the market.

[2] *Champagne: Decrease in Imports and Increase in Domestic Production*, April 25, 1907, p. 427.

also made in Orange County in the southeastern part of New York, in Northern Ohio, in Missouri, and a small amount from European grapes in California.

The manufacture of unfermented grape juice[1] is becoming an industry in New York and promises to substantially increase the production of grapes. Grape juice is what its name purports, the juice of the grape undiluted, unsweetened and unfermented. A good grade of grape juice contains no preservatives, the necessity for such being removed in the process of making, the chief operation of which is sterilization by heat whereby the germs of fermentation are killed. The product is an ancient one, as the Greeks, Hebrews and Assyrians used it as new wine; but the process of making an unfermented grape juice that could be kept for an indefinite length of time is quite modern, and is the outcome of the discoveries of the last half century regarding the control of the agents of fermentation.

The grape juice industry of the country is largely confined to New York and to the Chautauqua grape belt in the western part of the State. About one-fifth of the grape crop of this region was turned into grape juice in 1907. The output of the Chautauqua region is as follows: 1904, 400,000 gallons; 1905, 600,000 gallons; 1906, 1,000,000 gallons; 1907, 1,500,000 gallons. The Concord is used almost entirely in the manufacture of grape juice though a few other dark-colored grapes make a very good product. There is but little demand for a light-colored grape juice but some is made. Since the European grape does not make a good unfermented juice there is no fear

[1] Grape juice is made from clean, sound but not over-ripe grapes. The juice is pressed out by machinery in commercial practice but in the home manufacture of the product, the grapes may be pressed by the hands. If a light-colored juice is desired the liquid is extracted without heating the grapes; for a red juice the pulp is heated before pressing and the grapes must be dark in color. In either case the heating is done in a double boiler so that the juice does not come in direct contact with the fire. The proper temperature ranges from 180° F. to 200° F. and must never exceed the 200° mark if the flavor of uncooked grapes is desired. After heating, the juice is allowed to settle for twenty-four hours in a glass, crockery or enameled vessel after which it is carefully drained from the sediment and strained through some sterilized filter. In home practice several thicknesses of flannel, previously boiled, will do for a filter. The liquid is then filled into clean bottles leaving room for expansion in the second heating. The bottled juice is now heated a second time after which it immediately corked and sealed. The principles involved in making grape juice are the same as those observed in canning fruit and the operation may be varied in the former as it is in the latter if only certain fundamental processes are followed.

among growers of native grapes of competition from California or Europe. The rapid growth which this industry has made is most encouraging to grape-growers for it promises to furnish a permanent and profitable demand for good grapes.

Raisins[1] are not made from American grapes.[2] So far no varieties of the native species have been developed with sufficient sugar and solid contents to make a raisin acceptable to the markets. Even were there varieties from which raisins could be made, it is very doubtful if the climate of eastern America during picking and curing time is such that raisins could be made in competition with the product of California, now the greatest of the world's raisin producing regions, where the climate is almost perfectly adapted to the industry.

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[1] A raisin is a dried and cured grape. Raisin-making is a simple process. The grapes are arranged on shallow trays, and placed in the sun to dry, being turned now and then by placing an empty tray on a full one and turning both over after which the top tray is removed. When the grapes are properly dried they are put in bins to sweat preparatory to packing and shipping. The finishing touch in the drying is sometimes given in curing-houses, however, to avoid injury from rain or dust. Seeding, grading, packing and selling are now separate industries from growing and curing. At present all raisins are made from varieties of the Old World grape, no American sort having been found suitable for raisin-making. A variety adapted for making a raisin, something better than simply a "dried grape", must have a large percentage of sugar and solids, a thin skin, and a high flavor. American grapes lack in sugar content and have a skin so thick and tough that the fruit does not cure properly for a good raisin. The raisin industry in the United States is carried on only in California, the great bulk of the crop coming from the San Joaquin Valley and a few of the southern counties of that State. Formerly the raisins used in this country were wholly imported; now this product of the grape is exported and in increasing quantities. The annual production of raisins is in the neighborhood of 100,000,000 pounds.

[2] According to Bartram, the aborigines of eastern America made raisins from the wild grapes. He describes the process they used as follows: "The Indians gather great quantities of wild grapes which they prepare for keeping, by first sweating them on hurdles over a gentle fire, and afterwards dry them on their bunches in the sun and air, and store them up for provisions."

CHAPTER III

THE VITICULTURE OF NEW YORK

The history of the viticulture of eastern United States shows that the regions in which grapes have been most largely grown in the past have come into prominence, had their day, and then suffered a decline. The reasons for the more or less temporary character of grape regions are becoming more and more apparent as our knowledge of grape-growing increases. The grape, more than most other domesticated plants, is profoundly influenced by climate, soil, cultural treatment, and insect and fungus pests. In any region in which the grape succeeds at all well, conditions are more favorable at the start of the industry than later; this is especially true as regards soils, and the insect and fungus pests. In a discussion of any phase of grape culture, in a broad sense, the conditions under which the fruit is grown must receive careful consideration. We therefore include in this chapter a discussion of the characters which most strongly influence grapes in vine, fruit and general adaptability; also a brief discussion of the regions in which native grapes have been successfully grown in America; and, more particularly, an account of the viticulture and the grape regions of New York.

In their wild state the various species of native grapes seem adapted to a great diversity of soils and conditions. But under successful cultivation varieties of the several species are confined to somewhat restricted regions and even localities. Often a grape variety will succeed on one shore of a lake or river and not on the other; on one slope of a hill but not another. It is difficult to point out the determinants of successful grape culture. Adaptability can be known positively in many cases only by trial; for neither conditions of soil, nor climate, nor lay of land determines with certainty the adaptability of a given locality. Oftentimes one variety of a species may not be successful while another is completely so. Many varieties reach perfection in one region or locality but not in another though the conditions may seem very similar. So great is the influence of local environment, oftentimes, that a variety grown in one locality might not be recognized as the same grape when produced under other conditions.

The chief natural factors which govern the distribution of varieties of grapes are: Latitude and altitude; temperature of air and soil; water supply; the chemical and physical properties of the soil; air currents; and insects and fungi.

Latitude and altitude very largely determine the annual temperature, the amount and intensity of sunlight, and the length of the growing season — all very important factors in growing grapes. Species and varieties of grapes are usually adapted to regions having about the same latitude; northern types do not succeed in the South nor the reverse. Length of season has more to do with the adaptation of grapes than the degree of heat or cold, for some southern sorts are hardy in vine in the North but the seasons in the northern latitude are not sufficiently long for the fruit to mature. On the other hand, northern varieties mature too quickly in the South and pass through maturity to decay with too great rapidity. The metes and bounds of latitude are often set aside in grape-growing by local modifications. Thus it often happens that valleys in regions not generally adapted to viticulture are so protected from cold winds, so open to sunshine, or are so free from fogs or frosts as to furnish ideal conditions for grape-growing.

Probably the chief factor in determining the adaptability of a region to grape culture is temperature. Each of the different species and varieties of grapes requires a certain amount of warmth for its best development and can endure but a certain degree of cold. The temperature of a region is chiefly determined by latitude, altitude and proximity to large bodies of water, though variations in the surface of the country are often important modifying agents of temperature and especially influence spring and fall frosts.

The grape does best in an equable temperature and does not thrive in regions where there is a great daily range. Regions and seasons in which the temperature is comparatively low in the growing months of May, June and July and high, with much sunshine, in the maturing months of August, September and October, produce the best grapes in the latitude of New York. An average of from 55° to 65° for the first named period and of from 65° to 75° for the second are ideal temperature conditions for the grape.

This fruit is very sensitive to moisture conditions. Not only must the

total rainfall for the year be taken into consideration but its distribution throughout the seasons must be considered. The grape does best with comparatively little rainfall. When the rainfall is the least possible amount for a good growth of vine the grape crop will be the largest, of best quality and most free from fungi. Wet seasons, and especially wetness during the months of maturing, are disastrous to both quantity and quality of grapes. Thus, in New York it is not possible, with most varieties, to produce good grapes if the average is above six inches each for the three growing months and five inches each for the maturing months. It is far better for the crop that it be as low as four inches for the first named period and two inches for the second period.

Superfluous moisture in the soil favors too great a growth of vine, checks and weakens the root system, prevents proper setting of fruit, and favors fungi, but hinders the multiplication of phylloxera. In particular, a comparatively dry soil is desirable for grapes because of its influence on the development of the root system. In dry soils large root systems are developed in the search for the water that the plant must have. When intense droughts occur plants that have stood in damp soils have not sufficient roots to supply the necessary water to the aerial parts and the vines suffer in consequence. Some species and varieties are better fitted for withstanding an excess of moisture than others.

The soil exercises a great influence in determining the suitability of a region for viticulture. Several factors act as soil determinants: (1) Fertility; (2) physical characters; (3) soil heat. It is necessary to study each species, and even their varieties, to discover their powers of adaptation to different soils and it is possible to indicate here the good and bad qualities of soils only in the most general way. In the discussion of species and varieties the soil preferences of the different botanical and horticultural groups will be stated more fully.

Great fertility, as a natural characteristic, is not necessary in grape regions. Fertilizers, and especially the use of stable manures and cover crops, can be made to supply very largely a lack of fertility. Soils naturally too rich produce an overdevelopment of vine. Some species, as *Vitis rupestris*, grow naturally in very poor soils, the habitat of the latter being dry ravines and stony places having comparatively little organic

matter. The varieties of *Vitis rupestris* promise well for stocks upon which to grow other varieties in certain soils. In Europe calcareous or limy soils are not considered well adapted to grape-growing, but in America we often find very good vineyards on such soils.

The physical character of a soil has more to do with the welfare of the grape than fertility. Sand and clay are the two distinct types of soils usually found in general agricultural regions. As one or the other predominates soils take their character. So far as growth alone is concerned these two types of soil do not influence the vines much differently, but the fruit in quantity and quality is greatly influenced by them. According as to whether sand or clay is in excess a soil is loose or compact, retains or gives up water, and is warm or cool. A compact soil is made so by an excess of clay or of very fine sand. Grapes require a light friable soil and compactness is often a serious defect. Usually species and varieties with large, thick roots are better adapted to compact soils than those with small root systems, probably because the strong roots have greater penetrating power than the weak ones. Lightness and permeability of the soil may be influenced by subsoiling and through the use of stable manure and cover crops, but a hard soil is generally so ill adapted to grape-growing that this fruit should not be planted on it.

The heat-retaining properties of a soil must always be taken into account in growing grapes. The great preference which many varieties of grapes show for sands, loams, shales and gravels, depends largely upon the greater amount of heat found in such soils. In northern regions it is especially needful that the soil furnish an abundance of bottom heat for the grape. The removal of an excess of moisture is helpful in regulating soil heat; and, other things being equal, a well-drained soil is warmest.

Grapes grow more or less well in any soil adapted to fruit-growing. It is not true, even, that the grape is more particular as to soils than other fruits. But the necessity of having great quantity and high quality of fruit in profitable viticulture makes it very necessary to take their preferences as to soil into strict account.

Air currents are of minor importance compared with the other factors discussed yet are worthy of attention. They are chiefly of importance in grape-growing in the suppression of fungi. It has long been noticed that

in regions where there are strong currents of air the dreaded black-rot and the mildew are not nearly so harmful. Winds may be beneficial, too, when they bring warm air, when moisture laden, when they keep frosty air in motion, and possibly they have an effect on some small insects as the leaf-hopper. On the contrary they may be detrimental when too dry, strong or cold. Natural or artificial windbreaks may greatly modify the effects of wind currents though their value is usually overestimated as their benefits are often offset by the undesirable conditions caused.

Lastly, the prevalence or lack of insects and fungi in a region may decide its value for viticulture. In several instances flourishing viticultural industries have been destroyed in this country by insects or fungi, or both. In other regions the present supremacy of commercial grape-growing is almost wholly due to the fact that neither insects nor fungi are seriously troublesome. The advent of spraying and a better knowledge of the life histories of insects and fungi are lessening the importance of the parasite factor in determining the value of a region for grape-growing, but it is still of high importance.

We are now prepared to take up a discussion of the grape regions of New York.

The states in which the growing of American grapes takes the rank of an industry are, according to the census of 1900, in order of production: New York, Ohio, Pennsylvania, Michigan, Illinois, Indiana, Kansas, Missouri, Georgia and Oklahoma. The value of the product in the leading state was $2,763,711; in the last named state, $128,500. American viticulture, so far as native grapes are concerned, is almost wholly confined to twelve states. But viticultural interests are still further localized. In New York the industry is divided into four great regions, the Chautauqua district, the Central Lakes district, the Hudson district, and the Niagara district. In Pennsylvania and Ohio grape-growing is largely confined to the shores of Lake Erie; in Michigan to a small district about the towns of Lawton and Paw Paw; in Missouri, Hermann is the representative point for grape culture.

THE CHAUTAUQUA DISTRICT.

Of the four grape regions of New York the Chautauqua district is by far the most important though, excepting the Niagara, the most recent in development. The Chautauqua grape belt lies along the southeastern shore of Lake Erie. It averages about three miles in width and is about fifty miles long. Its northeastern boundary is in Erie County but not far from the line dividing Erie and Chautauqua Counties; its western boundary, in New York, is the Pennsylvania line, an arbitrary division, for the district passes into Pennsylvania. This narrow belt passes through the towns of Hanover, Sheridan, Dunkirk, Pomfret, Portland, Westfield and Ripley in Chautauqua County. Not all, but much, of the land is suitable for grape-growing.

The topography, geology, and soils of this grape-belt have been carefully mapped and studied.[1] [2]

The grape land is, as we have seen, a narrow strip of comparatively low land which borders the shore of Lake Erie. On the southern boundary of this low plain is a high hill or escarpment parallel to the lake and surmounting the grape belt throughout its entire length. This escarpment, the " Hill ", ranges from 500 to 700 feet above the plain and from 500 to 1000 feet above the lake. The plain is gently rolling and ascends from the bluff of the lake to the escarpment with a grade of from one to two hundred feet to the mile, forming in some places well-marked foot-hills to the escarpment proper.

The bed rock, according to Tarr[1] is upper Devonian shales and sand stones in both plain and escarpment. On the face of the escarpment and on the table lands of some of the foot-hills the soil is so thin that the plough frequently touches bed rock. This seldom comes to the surface on the plain except in stream beds and in shale ridges, but is to be found in fragments of greater or less size and in more or less abundance throughout the soils of the entire district. Everywhere on the plain may be seen ancient beach lines. These rise usually in two well-defined terraces but not infrequently

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[1] Tarr, R. S., *Cornell (N. Y.) Exp. Sta. Bul.*, 109. 1896.

[2] Burke, R. T. Avon, and Marean, Herbert, Field Operations, Bureau of Soils, U. S. Dept. of Agriculture. 1901.

there are from two to five distinct terraces between the lake and the escarpment. All conditions point to the theory that these ridges are wave built and therefore of lake origin. The plain, the gravel ridges, the foot-hills and the high escarpment are the chief topographical features of the grape belt.

The grape soils of the district, as mapped by the Bureau of Soils of the United States Department of Agriculture,[1] are Dunkirk clay, Dunkirk gravel, Dunkirk gravelly loam, Dunkirk sandy loam and Dunkirk shale loam. The grapes grown upon the several soils vary somewhat as to quantity per acre, as to flavor and sugar content and as to shipping quality.

The largest areas of Dunkirk clay are found running back from the lake east and west from Barcelona, in the neighborhood of Van Buren Point and about Dunkirk. In these regions the soil is a clay loam from several inches to a foot deep resting upon a stiffer and more tenacious clay. Vineyards located on this soil are very productive but the quality is not as high as in the fruit grown on the shale loam, though for most part superior to that produced on the gravel and sandy loams.

Dunkirk gravel soils are found on the ridges at the foot of the escarpment on the southern boundary of the district from Pennsylvania to the eastern boundary of the grape district. Throughout most of this distance there are from one to three parallel ridges varying from a few rods to a half mile in breadth; at many places the ridges run into each other or have been brought together by cultivation. It was upon this gravel that vines were first successfully grown. Grapes upon this soil ripen a week or more earlier than upon other soils and these lands are therefore largely planted with vineyards to supply the early market and they have a larger proportion of early varieties than vineyards on other soils. The Niagara is thought to do especially well on Dunkirk gravel.

Dunkirk gravelly loam is found running through practically the whole grape belt at the base or on the top of the gravel ridges; if at the base, to lakeward of the ridges. It is a sandy loam with much fine gravel and is underlaid at a depth of three feet with sand and shale fragments. On the surface it much resembles the gravel soils having had considerable top gravel brought there by washing and by cultivation. The grapes grown on these soils are very similar to those produced on the gravels

[1] Burke, R. T. Avon, and Marean, Herbert, Field Operations, Bureau of Soils, U. S. Dept. of Agriculture. 1901.

though there are some minor differences. Some varieties produce larger berries on this soil, and some sorts, it is claimed, a greater amount of wood.

The Dunkirk sandy loams occur in large irregular areas bordering the lake or running from the lake bluff back to the escarpment. By far the largest of these areas is found about Fredonia and Dunkirk and running east and west of these towns. A second area is found in the neighborhood of Brocton and Portland and especially to the north and west. There are smaller areas east of Barcelona and northwest of Ripley. Nearly all of the sandy loam soils are found on undulating or rolling land. The soil is a brownish-yellow loam from a half foot to a foot in depth. There are some deviations from the type and yet the true sandy loams can be very easily recognized. The soil is of rather heavy texture making good farming land and producing large crops of grapes of slightly inferior quality.

The Dunkirk shale loams are found upon the hill or escarpment. These form the grape lands farthest removed from the lake. This soil is comparatively thin, not averaging more than a half-foot in depth and is hardly ever found a foot deep. It is brown in color with much coarse fragmentary shale on the surface and underlaid with a considerable body of heavy clay. Part of the shale loam land lies on slopes too steep and rough for cultivation but the hillside table lands of this soil are especially well adapted to grape-growing. The grapes grown here contain much sugar, therefore keep and ship well, have a high flavor, and are especially sought for in wine-making; grapes on these soils mature early, have tough skins, but are only medium-sized berries. The yields are much more variable on this soil than on the others because of the great variation in the depth of soil. On deep soils of this loam the yield is all that could be desired. Because of the lay of the land, and the nature of the soil, there is much washing and cultivation must be done judiciously.

The climate is exceptionally favorable for the grape-grower in the Chautauqua district. It is, if anything, of more importance than the land; for grape soils are not uncommon, but a grape climate as near perfection as that of this region is indeed rare. The influence of the lake in modifying the temperature of the region is the chief climatic factor. This influence need not be dwelt upon here for it is common knowledge that large bodies of water temper cold winter weather, hold back vegetation in spring, equalize night and day temperatures of summer, lengthen the growing season and

ward off autumn frosts. Each of these influences is highly favorable to the growth of the grape. The escarpment on the southeastern boundary of the belt has a most decided influence on the climate chiefly because it confines the influence of the lake to a narrow belt. When the escarpment becomes low, as at the two extremities of the belt, grape-growing ceases to be profitable. When the distance between the lake and the escarpment is great, the climatic conditions are not so favorable.

The air currents and rainfall of the region are especially favorable. The in-shore breeze of the day and the off-shore breeze at night keep the air in constant motion, thus preventing frosts in spring and autumn, and probably cause in part the great degree of immunity to black-rot and mildew. Unfortunately, data to determine accurately the rainfall of the district cannot be had but such as have been taken indicate that the rainfall is comparatively light for the maturing months of August, September and October and not heavy for the three preceding growing months. Residents of the grape belt claim that most of the heavy showers pass over the hills or down the lake. The whole region is proverbially free from heavy dews. Rain and dew are favorable to black-rot and other fungi and the lack of them still further accounts for the immunity to these pests in the region.

The history of the rise of grape-growing in Chautauqua County forms an interesting chapter in the economic development of New York. The first vines in the Chautauqua district were planted by Elijah Fay[1] in 1818, near the present town of Brocton. These were wild vines of *Vitis labrusca* from Deacon Fay's boyhood home in New England. The vines grew luxuriantly but the fruit was not satisfactory and in 1822 this worthy pioneer obtained at great trouble roots of Miller's Burgundy, Sweetwater

[1] Elijah Fay was born in Southborough, Massachusetts, in 1781. He moved to Brocton, Chautauqua County, New York, in the fall of 1811. The early history of not only the viticulture but of the horticulture of the Chautauqua region is interwritten with that of the Fay family. Elijah Fay's children and grandchildren inherited a love of horticulture from their ancestor and several of them, as mentioned in the text, have been noted for their horticultural work in this region. Lincoln Fay, a nephew of Elijah Fay, one of the first men to grow and sell grape vines in the region, originated the Fay currant which was afterwards introduced by him and his son Elijah H. Fay. Of the Fay family, noted in the annals of grape-growing in this region, only G. E. Ryckman and L. R. Ryckman, grandchild and great-grandchild of Elijah Fay, are now living. Elijah Fay lived to the ripe age of eighty, dying in 1860. His memory should be long cherished as one of the founders of the viticulture of New York.

and Black Hamburg. But the second experiment was even more disastrous than the first as he got no fruit. The real start was made in 1824 when Mr. Fay obtained vines of Catawba and Isabella from Prince of Flushing, Long Island. The vines were trained on trellises. The vineyard covered a plot two by eight rods in extent. From a rise of land near this spot one now sees grapes everywhere, probably a greater acreage of them than can be seen from any other spot east of the Rocky Mountains.

In 1830 Deacon Fay made ten gallons of wine, the first for the region. In 1834, Lincoln Fay, a nephew of Elijah Fay, started the sale of grape vines but not many vines were sold for commercial plantings until as late as 1850. In 1859 there were in the town of Portland but twenty acres of bearing grape vines where now are thousands. During the decade that followed, the Concord was generally introduced giving the viticulture of the region a great impetus. Grapes were not yet grown for table use to any great extent and a large acreage could not be used for wine-making. In 1859 a wine-cellar was built by Fay, Ryckman[1] and Haywood at Brocton and for a long while this company used almost the total crop of the region. It was not until the early seventies that the grape-growers sought other markets than the wine-cellars. In 1870 there were about 600 acres of vineyards in Chautauqua County.

The first table-grapes of the region were packed in twenty-pound splint baskets. Dunkirk was the primary marketing place and the fruit was shipped from here to various large cities by through freight. The transportation facilities were not satisfactory and in 1880 Jonas Martin of Brocton tried the experiment of shipping a carload of grapes to Philadelphia. This was the first carload of grapes sent from Chautauqua County. In 1906, 4690 carloads were shipped and 844 were converted into wine and grape juice, representing all told $2,482,822.[2] Until 1883 the markets were confined to nearby cities but in this year a carload was safely sent to Spokane, after which time markets were found from the Atlantic to the Pacific and from the Gulf to Upper Canada. The first grape-growers' union was formed in 1886 as the Chautauqua Grape Growers' Shipping Association and its organization marked a new epoch in the grape industry of the district.

[1] The writer is indebted to Mr. G. E. Ryckman of this firm, for the information given here.

[2] *The Grape Belt*, **16**: No. 20, Feb. 26, 1907.

Smaller and larger organizations have since been formed and at the present time about 80 per ct. of the entire crop is handled by a growers' union known as the Chautauqua and Erie Grape Company.

According to Mr. G. E. Ryckman, in the early days of the grape industry in this region the fruit was shipped in round paper baskets holding from three to five pounds; later these were made of wood. Sometime in the early seventies twenty-pound splint baskets, which were supposed to be returned to the owners, were introduced. These were superseded by the twelve-pound climax basket; the size of this basket was soon reduced to ten pounds, then to nine, then to eight. Meanwhile a small five-pound basket made on the same lines as the larger one came into use but soon shrunk into a four-pound receptacle. The eight and the four-pound climax baskets are now generally used throughout the region. Increasing quantities are now being shipped to large cities in trays with slatted tops holding about forty pounds each; these grapes are used by the purchaser for wine-making. The wine and grape juice industries of the region have been touched upon in the general discussion of these industries.

An actual canvass made by this Station in the winter of 1906–7 shows there are in the Chautauqua grape belt at this time 30 000 acres of grapes. The census report of 1900 gave the number of vines for the county as 11,914,706, which at the usual number of vines per acre gives about 20,000 acres for the district. This figure was probably low, though that of the Station for 1907 may be somewhat high. The acreage is distributed in towns approximately as follows: Portland 9500; Westfield 5700; Ripley 5700; Pomfret 4600; Hanover 1950; Sheridan 1950; Dunkirk 600. A correspondent writes that the grape shipments for 1907 indicate a considerably larger acreage for the towns of Hanover and Sheridan than are here given. The average yield of grapes is a little less than two tons per acre for the region. The value of vineyards varies from $100 to $400 per acre.

The crop for the past seven years calculated by *The Grape Belt*[1] from figures secured from the railroads are as follows:

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[1] *The Grape Belt*, 16: No. 20, Feb. 26, 1907.

"Season of 1900	8000 carloads
"Season of 1901	6669 carloads
"Season of 1902	5062 carloads
"Season of 1903	2952 carloads
"Season of 1904	7479 carloads
"Season of 1905	5362 carloads
"Season of 1906	5634 carloads'

The seeming decrease in carloads shipped as the years progress is far more than made up by the greater use of the fruit in local wineries and grape juice factories.

According to figures gathered in the preparation of this work about 90 per ct. of the grape acreage of the region is set to Concord followed by 3 per ct. of Niagara, 2 per ct. of Worden and 1 per ct. each for Moore Early and Catawba with the remaining 3 per ct. made up of a dozen or more sorts among which Delaware leads.

The shipping season in this district begins early in September and lasts well into November though late varieties, as Catawba, and small lots of Concord are held some weeks longer. Improved storage facilities are yearly lengthening the season.

Several systems of pruning and training are in vogue in the district but the majority of the vineyards are pruned and trained in a system peculiar to Chautauqua County. The posts are from six to eight feet in height, one to each three vines; two wires complete the trellis. The lower wire is from 28 to 32 inches from the ground and the second from 22 to 36 inches above the first, the distance being changed as the vine comes to maturity. The grapes are trained according to the upright system and the vines are renewed to short horizontal arms and but few canes are taken out each year; the trunk reaches only to the lower wire. The arms are loosely tied to the lower wire and the canes and bearing shoots to the wire above. Cultivation varies greatly but the best growers practice close cultivation and make use of fertilizers; the cover crop is growing in favor. Spraying is not very general as the region has been remarkably free from pests. The chief insects now encountered are the grape-vine fidia,[1] the

[1] The grape-vine fidia (*Fidia viticida* Walsh) is a robust beetle, a quarter of an inch in length, brown in color but whitened by a thick covering of yellowish-white hairs. The beetle lays its eggs

flea-beetle,[1] the grape leaf-hopper[2] and the grape berry moth.[3] The several fungal diseases found in this region are, about in order of importance.

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in the cracks and crevices of the bark of the grape vines well above ground. The eggs are produced in large numbers, often as many as several hundred to the vine. Upon hatching, the larvae quickly worm their way into the ground and begin to feed upon the fibrous roots of the vine, passing from these to the larger roots. Possibly the chief damage is done on the larger roots which are often entirely stripped of bark for a length of several feet. The larvae attain their full size, a half inch in length, by the middle of August, and then hibernate until the following June. The winter is spent in earthen cells. After about two weeks as pupae in June, the full grown beetles emerge from the ground and begin to feed upon the upper surface of the leaves, eating out the cellular tissue, thus skeletonizing the foliage. The adults disappear the succeeding August. The most efficient means of checking the fidia so far found is an application of an arsenical spray applied during the time the beetles are feeding on the foliage.

[1] Grape-vine flea-beetle (*Haltica chalybea* Ill.).—The adult insects are shining steel-blue flea-beetles measuring about one-fifth of an inch in length. They live during the winter under the bark of the old vines or in rubbish in the fields. They emerge from their winter quarters during the first warm days of spring, and feed upon the opening buds and young leaves. Egg-laying begins late in April or early in May. The eggs are placed singly near the buds or upon the leaves and hatch in about ten days. The young larvae are dark brown in color but soon become prominently marked with black dots and patches. They are full grown in from three to four weeks at which time they measure about a quarter of an inch in length. They feed on the leaves devouring only the soft parts at first, but finally eating irregular holes through the leaves. When ready to pupate they go a short distance into the ground. The adults emerge during the latter part of June or early in July. They probably feed during all of the summer, finally seeking shelter for the winter as above indicated.

The vines should be sprayed with paris green, one pound to fifty gallons of water, just before the buds begin to swell or with some other arsenite. Much pains should be taken to make this application thorough. Later when the worms appear on the leaves, paris green may be applied at the usual strength, one pound to 150 gallons of lime and water, or combined with bordeaux mixture. Both upper and under surfaces of the leaves should be covered. Applications of arsenicals for the grape-vine fidia will help greatly to keep this insect in check.

[2] Grape leaf-hopper (*Typhlocyba comes* Say).—There are several species of leaf-hoppers which attack the grape but this species is probably the most common in this State. These little leaf-hoppers are often erroneously called thrips. The adult insects measure about one-eighth of an inch in length. They vary greatly in color but the prevailing color is usually light yellowish-green. The back and wings are ornamented with bright red, yellow and brown. They are found upon the vines from spring until fall. They feed together, sucking the sap from the leaves, principally from the under surface, causing them to turn brown in patches. The eggs are deposited singly in the tissue of the under surface of the leaves. The young resemble the adults in form but are not provided with wings and are green or yellowish-green in color. There are several broods during the season. Some of the adults of the last brood hibernate in any convenient rubbish about the vineyard. Treatment for young hoppers should be made early in July. To obtain the best results use whale-oil soap at the rate of one pound to ten gallons of water, directing the spraying with the hand. Vineyards and adjacent land should be kept as free as possible from grass and weeds as they afford shelter to the insect.

[3] Grape berry moth (*Polychrosis vitcana* Clem.).—The young caterpillars feed within the grapes finally causing them to turn dark colored and to wither. This injury is sometimes mistaken for the

black-rot, downy mildew, or "brown-rot," powdery mildew, and anthracnose, or "bird's-eye rot."

THE CENTRAL LAKES DISTRICT

Several important areas of vineyards are grouped about the central lakes in western New York. While there are at least three distinct localities in this district, namely, the areas about the three lakes, Keuka, Canandaigua, and Seneca, yet the soils, climate, varieties and methods of caring for vineyards and product are so nearly alike that all may be treated as one district. The vineyards are in five counties, Ontario, Yates, Schuyler, Steuben and Seneca. The Keuka area, in Yates and Steuben Counties, is by far the largest; and the region is often called the Keuka grape district. Vineyards surround Keuka Lake and all but the northern end of Canandaigua Lake, but only on the banks of the southern half of Seneca Lake are grapes grown. The somewhat extensive vineyards about Naples, south of Canandaigua Lake; Bath, south of Keuka Lake; and of Romulus between Seneca and Cayuga Lakes, belong in the Central Lakes district.

The geology of the Central or Finger Lakes has been studied by many workers and the geological history of these remarkable bodies of water is now well known.[1] It is very generally agreed that these lakes fill, in part, preglacial valleys and that the valleys were transformed into lakes by glacial action. The basins of the lakes may have been and probably were

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black-rot. After devouring the soft parts of one grape the caterpillar goes to another, fastening the two together by a silken thread. This may be continued until several in a bunch have been destroyed by one caterpillar. The young caterpillars are very light green in color with a brown head. When full grown they measure about one-fourth of an inch in length and are dark olive green in color tinged slightly with red. The cocoon is formed on a leaf and is partially composed of two small pieces cut out of the leaf. The adults of the spring brood emerge in from twelve to fourteen days. The forewings have a bluish tinge and are marked with brown, while the posterior wings are dull brown. The moths are small measuring nearly half an inch from tip to tip when the wings are spread. The eggs are probably laid late in June or early in July. There are two broods annually in this State. As the caterpillars spend most of their lives within the grape berries, spraying does not entirely control the pest. Yet the arsenicals applied for the grape-vine fidia will help much in keeping it in check. Picking and destroying the infested fruit and the leaves containing the cocoons helps much.

[1] For a full account of the geology of these lakes and the valleys in which they lie, see the *Physical Geography of New York State* by Ralph S. Tarr. New York. 1902.

deepened by the erosive action of glaciers but it is fairly certain that there were pre-existing valleys which were dammed by glacial deposit.

The topography is more or less rough and broken. The steep hillsides of the lakes were formed not only by erosion but by the tilting of the land. Beside these hillsides of the lakes to give character to the topography of the region, there are ranges of hills and the remains of some moraines, so that in general the land is very uneven. This is especially true of the parts of it devoted to grape-growing though in some grape sections there are many stretches of smooth and regular vineyards.

The soils of this great region vary much, as is always the case when land is made by glacial erosion and deposit of glacial drifts. On a single farm the soil may be thick and fertile in one part and thin and poor in another; it may consist largely of clay in one part and of sand and gravel in others. The grape soils in the Central Lakes region are, in particular, of miscellaneous types, embracing, in one place or another, nearly all of the soils in the Dunkirk series described in the discussion of the Chautauqua district. Probably the Dunkirk clay loam, often very shaly and stony, is the most common of the several soils of the region. There are also considerable areas of a shaly soil which possibly do not belong to the Dunkirk types, not having been influenced by water action as are true Dunkirk soils. On the slopes and hillsides the land is sometimes rough and stony with but a thin covering of soil and with out-croppings of bed rock. The influence of the various soils on the grape has not been studied as in the Chautauqua district but, as noted, the soils in the two districts are in many cases similar so that the discussion of the influence of the several types given for the Chautauqua district will apply in large part to the Central Lakes district.

The Central Lakes have a very perceptible influence on the climate of the region. The lakes are deep and conserve warmth. The water of Seneca Lake is so deep, and consequently warm, that it has been known to freeze over only a few times in the past hundred years. The winter climate in this region is much less severe than in adjacent territories. Not only does the water modify the severity of the winter climate but the enclosing highlands materially assist in keeping in the warmth of the valleys. Since the lakes run, generally speaking, north and south, the winds

are deflected to these directions very largely. In the summer, both days and nights are cooler and the climate more equable near the lakes. These modifications of climate are all favorable to grape-growing.

The first grapes grown in this district, so far as records show, were set by the Rev. William Bostwick at Hammondsport in 1830. The varieties were Isabella and Catawba and these he succeeded in raising to perfection. From this time onward scattering vines were planted in gardens about the three lakes. About 1836 Mr. J. W. Prentiss, originator of the Prentiss grape, planted a small vineyard at Pulteney from which considerable fruit was sent to market from time to time and the vineyard was constantly enlarged. In 1853 a commercial vineyard was set out by Andrew Reisinger, a German vine-dresser, consisting of two acres of Isabella and Catawba at Harmonyville in the town of Pulteney. Reisinger trained, pruned and tilled his vines, operations unheard of before in the district, and was rewarded with crops and profits which stimulated grape culture in his and nearby neighborhoods.

In 1855 the Hon. Jacob Larrowe and Mr. Orlando Shephard planted small vineyards of Isabella and Catawba in Pleasant Valley near Hammondsport and were so successful that in 1858 their vineyards were greatly increased and others in the valley embarked in the business of vine-culture. Viticulture was now fairly started and the industry grew apace from 1858 onward. In 1860 two hundred acres of grapes were set in Pleasant Valley alone and elsewhere on Keuka Lake large plantings were made. Grapes brought from fifteen to thirty cents per pound and a bearing vineyard at this time was as good as a gold mine.

Plantings were begun in the Yates County portion of the Keuka district in 1855 when Mr. W. W. Shirland set a small vineyard of Isabella in Benton township.

There seem to be no records as to the first plantings about Seneca and Canandaigua Lakes but all available information indicates that plantings about these two lakes came in the spreading of the industry from Keuka Lake. E. A. McKay of Naples seems to have had a vineyard of some extent as early as 1848 from which he sold fruit. There must have been vineyards of considerable size about Avon in Livingston County in the early fifties; for Larrowe, Shephard and others obtained cuttings at

this place in 1855 for their vineyards in Pleasant Valley. Who owned these Avon vineyards, and what their extent was, does not appear.

The first commercial shipment of any considerable amount beyond the towns nearby was made in 1854 when Mr. J. W. Prentiss shipped a ton of Isabella packed in tubs to New York City. The tubs were made by cutting apple barrels in half and were packed half full when a thin board partition was put in after which the tub was filled and covered. The consignment reached the city in fair condition and brought fifteen cents per pound but a second ton shipped in the same way "broke" the market.

John Mead of the town of Benton introduced the Concord in this region in 1861 and the same year Henry Rose of Penn Yan set the first Delaware to be planted commercially in the district. The Concord soon took the place of the Isabella but could not displace the Catawba as it did in the Chautauqua district. The Delaware grew in favor and rapidly assumed third place in the list of varieties about the three lakes, a position which it still maintains, though it is closely followed by the Niagara.

By 1860 grape-growing had become so general that the need of further outlets for the fruit was felt and the Pleasant Valley Wine Company was formed for the manufacture of wine and brandy. For several years following, this company used about one-third of the output of Pleasant Valley, helping very materially to steady the market for the whole district. A few years later another large company, the Urbana Wine Company, was formed; and when still later it was discovered that the champagne made about Keuka Lake was superior to that made in any other part of America and that, with experience in making, it rivalled the champagne in France, wine-making became an important adjunct to grape-growing in this district. Now there are about twenty-five companies making wine and champagne on or near the shores of the three lakes, the industry having its center on Keuka Lake. Wine-making is still in its infancy and because of the demand it creates for grapes, and the high prices paid by the wineries, will continue to exert a most favorable influence on the viticulture of the district. There is but little unfermented grape juice made about the Central Lakes.

A valuable asset of this district is its long range of season. Grapes

ripen from one to two weeks earlier about these lakes than they do in the Chautauqua belt. Thus the Concords grown here are well out of the way of those grown in the Chautauqua district. The Catawba, which ripens late and is a "good keeper", can be kept in fine condition until midwinter or later. The range of season in this district, then, is from the first part of September until February or even March.

Though there have been grape-growers' unions for marketing the fruit of this district at various times, most of it now goes through the hands of individual buyers. An exception is the product of the large vineyards of Niagaras in Seneca County, the fruit of which is marketed with that of the product of other Niagara vineyards of the Niagara district of western New York through a union of growers.

The grapes in this district are variously trained but the high renewal system is used chiefly. In this system the head of the trunk is from twenty to thirty inches from the ground. Usually the trellis has three wires, the lowest about twenty inches from the ground and the others at distances of eighteen inches apart. New canes are brought out from renewal stubs and once in two or three years an attempt is made to bring them directly from the head of the main trunk. This system is particularly well adapted to the Catawba and Delaware so generally grown in the lake region. Thorough cultivation is practiced and the fall cover crop of oats, barley or clover is coming into favor.

It is difficult to ascertain the acreage in this district. Taking the figures of the census of 1900 and those of a canvass made by this Station in the winter of 1906–7 the acreage in the several counties is about as follows: Yates, 7940; Steuben, 5570; Ontario, 2630; Schuyler, 1014; Seneca, 1540; total 18,694. These figures are slightly larger than the estimates of grape-growers and buyers but chiefly so because they take in scattered plantations throughout the several counties. Thus in all of these counties there are a surprisingly large number of Niagara vineyards in out-of-the-way places, set during the Niagara boom of the eighties. To this Central Lakes district might also be added 500 acres of commercial vineyards in Livingston County; 250 in Cayuga and 250 in Tompkins Counties. The total valuation of the crop in this district in 1900 was $943,964.

Insects are not as troublesome in the Central Lakes district as in the

Chautauqua district. The grape-vine fidia, or root-worm, one of the worst of the insect pests of the grape, is not yet destructive in this region. The grape leaf-hopper and the grape-vine flea-beetle are possibly the worst of the insects infesting the grapes about these lakes.

But fungi are more troublesome than in the Chautauqua district; probably because the climatic conditions are more favorable to the development of these pests about these smaller lakes than near Lake Erie. The five most troublesome diseases, named about in order of importance are black-rot,[1] downy mildew,[2] or "brown-rot", powdery mildew,[3] anthrac-

[1] Black-rot (*Guignardia bidwellii* (Ell.) V. & R.) usually appears first on the leaves where it forms circular, reddish-brown spots on which black pimples, or spore cases, develop. Within these spore cases, at maturity, are the summer spores. These are distributed by the elements to the growing parts of the plant and form new centers of infection. The diseased berries show analogous circular spots bearing spores and as the disease progresses the grapes wither, turn black, and become hard and shrivelled, sometimes clinging to the vine until the following spring. Growing shoots are attacked as well as leaves and fruit. During the winter and spring the resting spores are formed, usually upon the shrivelled berries.

Treatment consists of destroying as far as possible all diseased fruit, old leaves and prunings and in spraying thoroughly with bordeaux mixture as follows:—

1. Just as the pink tips of the first leaves appear.
2. From ten days to two weeks after the first spraying.
3. Just after the blossoming.
4. From ten to fourteen days after the third spraying.
5. After an interval of from ten to fourteen days from the fourth spraying.

[2] Downy mildew (*Plasmopara viticola* (B. & C.) Berl. & De Toni) is a troublesome fungus attacking all of the tender growing parts of the grape. It does most damage to the leaves, upon the upper surface of which it produces greenish-yellow spots of irregular outline. At the same time a loose white downy growth appears on the under side of the leaves. This growth consists of short filaments bearing spores, the summer spores, which are carried by the elements to other growing parts of the plant, thus spreading the disease. Affected berries, if young, first show a brown spot, and become covered with the gray down which distinguishes the fungus. On older berries the fungus causes a brown-purple spot which spreads until it takes in the whole berry, which then becomes soft and often falls, or they may become hard and persist. At this stage the disease is commonly known as "brown rot". The winter, or resting, spores are produced in the tissue of fruit and leaves and with a thick protective covering. The winter spores are dark, almost black, in color. Downy mildew spreads and does most damage in hot wet weather. Spraying with bordeaux mixture as indicated for black-rot will keep downy mildew in check.

[3] Powdery mildew (*Uncinula necator* (Schw.) Burr.) is caused by a fungus which lives on the surface of the leaves. It subsists by means of sucker-like organs which penetrate the walls of the surface layer of cells. The vegetative portion of the parasite consists of fine white filaments which spread over the surface of the leaves, shoots and fruit. In the summer these filaments send up short, irregular stalks upon which large numbers of barrel-shaped spores are produced in chain-like arrangement. These are the summer spores of the fungus. They are borne in greatest quantity

nose,[1] or "bird's-eye rot" and chlorosis,[2] or "yellow-leaf". Vineyards are very generally sprayed in this district and usually with satisfactory results. Grape-growers have learned that certain varieties are much more susceptible to some of the diseases than others and plant accordingly.

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on the upper surfaces of the leaves and give the leaf a gray, powdery appearance — hence the name, powdery mildew. Affected leaves finally become light brown and often fall. Diseased fruits are gray in color, scurfy, become specked with brown, fail to develop and often burst on one side thereby showing the seeds. The winter or resting spores are borne in sacs, in the latter part of the season. The spore sacs, in their turn, are borne in small, black, spherical spore cases, each furnished with a number of slender appendages having curled tips. The powdery mildew, unlike most other fungus troubles of the grape, is most prevalent in hot dry weather. The disease is combatted by dusting with flowers of sulphur or by spraying with bordeaux mixture as for black-rot.

[1] Anthracnose (*Sphaceloma ampelinum* De By.).—This disease attacks any of the tender portions of the growing vine. When the leaves are affected dark spots are first formed on their surface. As the disease advances these spots enlarge, and irregular cracks are often formed through the dead tissue. Frequently many of these small cracks run together, forming a long irregular slit through the leaf. Similar marks are formed on the tender shoots, though they are not so noticeable. When the fruit is attacked the disease is sometimes called bird's-eye rot. Circular spots are formed on the surface of the berry. The spots may be of different colors and usually have a dark border; as the spots enlarge and eat in, a seed is often exposed in the center. In rotting the tissue becomes hard and wrinkled. Sometimes the disease girdles the stem of a fruit cluster, cutting off the supply of sap from the grapes beyond the diseased line and causing them to shrivel and die.

Anthracnose does not spread as rapidly as some other vineyard diseases, neither does it yield as readily to treatment. When a vineyard is badly infested with anthracnose, it requires prompt attention and a careful treatment to control the disease. It is not satisfactorily controlled by bordeaux mixture alone. It is suggested that in addition to such treatment with this mixture as is given for black-rot the plan be followed which is advocated by certain European authorities, of applying a warm saturated solution of copperas (iron sulphate) in spring when the buds are swelling but before they begin to open. One per ct. or more of sulphuric acid may be added to the solution before it is applied. This solution must be handled with care as it is very caustic. It is applied with swabs or if the acid is not used it may be sprayed. It is essential that the work be done thoroughly, covering all the surface of the canes.

[2] Chlorosis or yellow leaf.—The name is applied to a grape disease in which the foliage turns yellow, later becoming brown. It is common in several parts of the State but more particularly in the Central Lakes district. Chlorosis is more likely to appear in wet seasons. Some varieties, as the Diamond, are much more susceptible than others. In some seasons portions of the leaves may become yellow but eventually regain their normal color so that at the close of the season the vine appears to be in a healthy condition. In other instances the yellow color extends over the entire leaf; brown, dead patches appear; the leaf curls and eventually drops from the vine. If the vine loses its leaves two or three seasons in succession it is likely to die. One striking peculiarity of the disease is the fact that a badly diseased vine may appear by the side of a perfectly healthy vine of the same variety.

The cause of chlorosis, as given by foreign investigators, is the presence of a large amount of lime in the soil which prevents the roots from taking up an amount of iron sufficient for satisfactory

HUDSON RIVER DISTRICT.

The region along the Hudson River forms the third largest grape district in New York. According to the census of 1890 there were 13,000 acres of grapes in this district but in 1900 the returns gave less than half that acreage. The great falling off was due to the taking out of a considerable number of old vineyards which had been planted with too many varieties, or with worthless varieties, or in some other respect were poorly set plantations. It is doubtful whether the acreage in 1907 is greater than in 1900 but the industry is in a more healthful and prosperous condition now than then.

An estimate of the present acreage, and its distribution, made in the preparation of this work, gives the standing of the district as follows by counties: Columbia, 865 acres; Dutchess, 448 acres; Orange, 865 acres; Ulster, 4021 acres; total, 6199 acres. Beside the above there are, of course, some scattering vineyards. There are only two or three wine-cellars in the district and probably 95 per ct. of the product of the vineyards is sold for table grapes or to those who make wine in small quantities.

The grape lands of the Hudson River Valley are found very largely in the geological division known as the Taconic Province.[1] This province is a broad valley which extends from Pennsylvania across New Jersey, taking in Orange and parts of Ulster and Dutchess and Columbia Counties, then passing out of the State. The rocks in this geological division are shales, slates, schists, and limestones; and the soil is derived from these rocks. The grape lands, for most part, are those in which there is much shale or slate and in more or less coarse fragments, the finer particles being clay or gravelly loams. The district is more or less hilly, some of the vineyards being in valleys of a few acres extent, others in broad, gently undulating plains and still others on comparatively steep hillsides.

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growth. Their experiments seem to show that the difficulty may be overcome by applying a small amount of sulphate of iron around affected plants. But since there are a number of good American varieties that are not subject to chlorosis, perhaps the better method to pursue is to plant only such varieties as are known to be free from this trouble.

The standard varieties given in the following list are, so far as we know, practically exempt from chlorosis: Moore Early, Concord, Winchell, Delaware, Worden, Niagara, Catawba, Vergennes and Agawam.

[1] Tarr, R. S., *The Physical Geography of New York State:* 4. 1902.

The climate of the Hudson Valley changes rapidly as one goes up the River because of the diversity of its physical features and the wide variety of atmospheric influences to which it is subject. In the part of the Valley in which grapes are grown the summer temperature is high owing to the position between ranges of mountains and to the southerly winds which prevail at this season. In the winter the winds are northerly and the temperature is often low making the culture of tender grapes hazardous. The influence of the river, really a broad estuary in the grape regions, at all seasons is most favorable for fruit-growing.

The lowlands of the Hudson Valley receive a somewhat small amount of rainfall as compared with the rest of New York because when moisture is being carried inland from the Atlantic it is largely precipitated by the mountains and highlands of New England. This is favorable to grape-growing. Another desirable feature of the rainfall of this Valley is that the maximum summer downfall is in July whereas in many parts of the State it is in September or October. This relatively light rainfall in the maturing months is more marked in this than in any other of the grape districts of the State.

The recorded history of commercial viticulture dates back to 1827 when Mr. Robert Underhill and his two sons, R. T. and W. A. Underhill, planted a vineyard of Catawba and Isabella at Croton Point which eventually covered seventy-five acres. For some years this vineyard practically supplied the large markets of the region with grapes. In 1829, Rufus Barrett of New Paltz, began shipping Isabella grapes in small quantities to the New York market. Barrett lived in a settlement of French Huguenots, who after having experimented more or less with European sorts, early in the nineteenth century began planting native varieties. It is probable that Barrett obtained his inspiration for planting and knowledge of vine-growing from these Frenchmen.

In 1837 a French vintner, John Jacques, set out a vineyard for wine-making at Washingtonville, Orange County. The varieties set were Catawba and Isabella, purchased from Prince of Long Island. Some of these vines are still living, vigorous and thrifty at three score years and ten. The originai plantation consisted of but a half acre but in 1838 this was increased to ten acres. This is probably the oldest vineyard of native

grapes in New York. The third year from the planting of this vineyard wine was made, and has been made at Washingtonville ever since, so that this community may claim the oldest winery as well as the oldest vineyard in the State.[1]

William T. Cornell planted a vineyard of Isabellas near Clintonville, Ulster County, in the year 1845. Mrs. Cornell and Mrs. William A. Underhill were sisters, so that Cornell's vines came from Croton Point. A. J. Caywood, of Marlboro, was a brother-in-law of Mr. Cornell. Thus the inspiration of this noted viticulturist to plant grapes, and to originate new sorts, may be traced directly back to the Frenchman, Parmentier who, as we have seen, furnished the Underhills with their vines and gave them instructions for their care. The Catawba and Isabella were grown almost entirely until the introduction of the Delaware and Concord, after which the first named sorts dropped out entirely, being subject to mildew and ripening late in the season.

The Valley of the Hudson has more reason to be called the birthplace of American viticulture than any other of the grape-growing districts of the country. The grape and wine industries, as we have seen, were early started here. Prince's Linnæan Garden at the mouth of the Valley was the first distributing agency for American grapes. Its owners did more than distribute grapes, they distributed knowledge and trained men. A. J. Caywood of Marlboro, J. H. Ricketts of Newburgh, Stephen Underhill at Croton Point, Dr. A. K. Underhill at Charlton, Dr. C. W. Grant at Iona, W. D. Barns of Middlehope, Dr. William M. Culburt of Newburgh, were notable early originators and experimenters with grapes and from their vineyards have come some of the best of our native varieties. Kniffin, the Downings, and Buel are other familiar names in viticulture and horticulture of those who lived on the Hudson and who have helped to invest the region with sentiment and with interest for the grape grower.

The number of varieties grown in this region is far greater than in other parts of the State; as would be expected from its having been the birthplace of so many and from its nearness to large markets where fancy sorts can be disposed of to advantage. The Concord leads in acreage followed

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[1] See *Story of the Vine*, E. R. Emerson: 198. 1902.

in order of acreage by Delaware, Niagara, Worden, Moore Early, Bacchus, Pocklington, Campbell Early, Hartford and Vergennes after which come a great number of less well-known sorts grown in acre or less quantities. The value of the crop in this district in 1900 was $298,350.

During the early years of grape-growing along the Hudson the methods of training were essentially those used in Europe. The vines were kept well headed back and were trained to stakes of varying heights. It did not take long to discover that for our native grapes the vines must be so trained as to give the fruit and foliage the greatest possible amount of sunshine; to regulate the bearing wood; to permit them to bear just so much and no more fruit; and to control the height of the main trunk. Soon distinctive systems for native grapes arose and one of the earliest of these originated with William Kniffin of Ulster County. This system still bears his name and is most generally used either as it was first practiced or in some of its modifications. In the Kniffin system, and its modifications, the trunk is carried to the top wire and the bearing shoots are allowed to droop; for this reason this method of training is often called the *drooping* system in contra-distinction to the upright systems hitherto mentioned in which the bearing shoots are tied to wires above the canes from which they grow. The Hudson Valley growers claim that the Kniffin system is especially desirable for the strong growing sorts like Concord, Worden, and Niagara but admit that for the slender shorter growing kinds like Delaware and Catawba the upright system is best.

As is always the case when fruit is grown near to the market in which it is sold, there is little uniformity in the packages in which it is shipped and the manner in which the fruit is packed. Most of the fruit from the vineyards along the Hudson goes to market in climax baskets of the two standard sizes. Some of the growers pack two, or even three varieties, in one package for the purpose of giving a range in color and quality. The shipping facilities along the river are unexcelled. Most of the grapes go by boat down the Hudson to New York City. In this case the fruit is loaded late in the evening and reaches its destination early the next morning. The rail connections to New England cities are good and large shipments go eastward by rail while smaller quantities go inland and south. The fruit is not marketed through unions nor has co-operative

selling been tried, the nearness to market obviating the necessity of co-operation.

The insect pests in this district are neither numerous nor particularly destructive, the grape leaf-hopper and the grape-vine flea-beetle being most common. Spraying for insects is not generally practiced. On the other hand the fungus troubles are serious, the black-rot having been especially destructive in some sections. The other diseases are much the same as in the districts discussed. While all of the fungi of the district are amenable to treatment yet spraying has not been generally practiced nor have the vines been kept as vigorous and healthy through cultivation and fertilization as to withstand the attacks of the several fungi. The decreased acreage of grapes along the Hudson during the past decade or two is due in some measure to the fact that the grape diseases have not been controlled. With better knowledge of the life-habits of the insects and fungi which attack vineyards, and means of combatting these pests, viticulture should regain the prestige it once held in the Hudson Valley.

THE NIAGARA DISTRICT.

The Niagara district, the smallest of the several grape areas of the State, lies along the Niagara river and the southern shore of Lake Ontario. In it are about 4700 acres distributed in counties as follows: Erie, 2100; Niagara, 1250; Orleans, 375; Monroe, 700; Wayne, 380. In the southern part of Erie County the vineyards are grown under conditions very similar to those we have described in the Chautauqua district; the treatment given is much the same; the grapes are marketed as are those in the district to the south and west; and the Concord, as in the larger district, is the variety most largely grown. But conditions in the northern and eastern part of the county more nearly approach those along Niagara river and the Ontario shore so that the county is included in the Niagara district.

In Niagara, Orleans, Monroe, and Wayne Counties the grape lands are in what is known as the Ontario plain. This plain has for its western boundary in the United States, Niagara River; for its northern boundary Lake Ontario; to the south there is a high escarpment, the Niagara escarpment, or "the mountain", separating the Ontario plain from the Erie plain which is an eastward extension of the low plain on the south shore

of Lake Erie. The Niagara escarpment may be seen well at Lewiston from which point it stretches eastward toward Lockport and westward into Ontario. The escarpment may be traced to the eastern end of Lake Ontario where it disappears and the Erie and Ontario plains merge into one. In the grape-growing counties the Ontario plain varies from four to nine miles in width.

The plain is more or less rolling throughout its entire length; but in few places are the hills too steep for fruit-growing. The soils are sandy, gravelly, or clay loams varying greatly in fertility and in adaptability for the grape. In parts of the district the soils are stony and shaly. They belong, so far as they have been studied, to the Dunkirk series and are therefore quite similar to those of the Chautauqua district.

The climate, too, is much like that of the Chautauqua district. The average midwinter temperature is comparatively high; the summer temperature is equable; and the precipitation of rain and dew light as compared with inland areas. The influence of the escarpment is not so marked in the Niagara district as in the Chautauqua belt. A remarkable feature of the climate of this district is that killing frosts rarely occur before the close of October, giving a long maturing and harvesting season for the grape. In the winter the daily range of temperature is small owing not only to the influence of the water but to the fact as well that this season is a period of great cloudiness for the region.

In Erie County much of the product of the southern part is marketed with that of Chautauqua County but to the north, Buffalo makes a splendid local market. Several varieties are grown for the home market but chiefly the Concord and the Niagara. These are packed in the various styles of climax baskets and in slatted crates — the latter for the home making of wine. The fruit is carted to the market by the grower, or purchased in the field, in the case of wine-making, by the consumer.

Niagara County is the home of the Niagara grape and this variety is grown here almost exclusively. The product is sold very largely by the grower in the open markets of Buffalo and Niagara Falls and is packed in the several sizes of climax baskets. In the counties to the east of Niagara the product, almost exclusively Niagaras, is sold at Rochester or neighboring towns or shipped to the large eastern cities. Much of this fruit is

sold through the Niagara Grape Market Company, a co-operative union, with headquarters at Lockport, New York.

The Niagara region is the newest of the grape districts of the State. There were few plantings along the shore of Ontario until 1886 when the Niagara grape was introduced and vineyards were put out in considerable numbers throughout the whole extent of the district followed by still heavier plantings during the succeeding several years. It was soon demonstrated that the region was well adapted to grape-growing and especially for the Niagara grape but that there were many soils and locations wholly unsuitable for vineyards. Consequently during the years that followed the bearing of the first grapes, many vineyards have been abandoned so that there are now scarcely as many acres as at the close of the first period of expansion about 1900. The insect and fungus pests are much the same as in the Chautauqua district though the dreaded grape-vine fidia is not yet nearly so common, but, on the other hand, the black-rot is far more destructive, probably because the Niagara grape is very susceptible to this fungus.

CHAPTER IV

SPECIES OF AMERICAN GRAPES.

THE GENUS VITIS.

The genus Vitis was formed and named by Tournefort,[1] a French botanist, more than two hundred years ago. In his work, *Institutiones Rei Herbariae*, published in Paris in 1700, he gives the following description of this genus:

"The Vitis is a genus of plant with a (A) flower shaped like a rose, with many petals placed uniformly in a circle, out of the middle of which arises the pistil (B), with stamens pressed together (C), the flower (D,E,F) folds upward; the pistil develops into an edible berry (E), fleshy, full of juice, and usually with four seeds (H,I), the seeds are pear-shaped (K)."

The capital letters in the parentheses refer to illustrations. These indicate that Tournefort had a very clear conception of the flowering parts of a grape. He gives twenty-one species under this genus of which nine are American, one, however, being our Virginia creeper. Tournefort's work is all very indefinite; others of the species than those credited to America may be American, and it is quite possible that of the nine some would not be classed among the grapes to-day. Each species is credited to some previous botanist and it is evident that Tournefort was a compiler rather than an original worker with grapes.

The next botanist who contributed to our knowledge of this genus was Linnaeus, the great Swedish systematist, who, in his *Genera Plantarum*, 1754, gives the following description of the flower (Like Tournefort's, Linnaeus' book is written in Latin and the extracts here given are free translations):

"Calyx. Five-toothed, small.

"Corolla. Petals five, rudimentary, small, caducous.

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[1] Joseph Pitton de Tournefort, a French botanist of considerable reputation in his day, was born at Aix, Provence, in 1656 and died in 1708. He was educated by the Jesuits for a priest but following a natural inclination he later became a botanist. In 1683 he became professor of botany at the Jardin des Plantes in Paris. While occupying this position he made trips through western Europe, Greece and Asia Minor. His principal work, and the one quoted here, is *Institutiones Rei Herbariae* in three volumes, published in Paris in 1700. He was one of the most prominent systematic botanists who preceded Linnaeus.

"Stamens. Filaments five, subulate, erect, spreading, caducous, anthers simple.

"Pistil. Ovary egg-shaped, style none, stigma obtuse headed.

"Pericarp. Berry nearly round, large, one cell.

"Seeds. Five, plump, terminate cordate, base contracted, partially divided into two cells."

Linnaeus in his *Species Plantarum* of 1753, gives seven species as belonging to this genus, three of which are credited to America. One, however, *Vitis arborea*, is not classed among the grapes by present-day botanists.

Marshall,[1] the first American botanist we have to consider, for neither Tournefort nor Linnaeus had ever been on this continent, in his *Arbustrum Americanum*, 1785, describes the genus Vitis in terms so nearly identical with those of Linnaeus as to lead one to suspect that it is merely a translation from the *Genera Plantarum*. Marshall gives five species. One of these is certainly not a grape and one other is indeterminate.

Thomas Walter,[2] in his *Flora Caroliniana*, 1788, gives a brief description of the genus very similar to the foregoing but he also speaks of the masculine and feminine forms of the flowers, a point that does not seem to have been noticed by any botanist of an earlier date. He speaks of the corolla adhering at the top and coming off as a cap, one of the distinguishing characters of Vitis. This latter point had, however, been noted by Tournefort, and his figures show that this is what he means when he speaks of the flower as folding upward. Tournefort, however, seems to have been under the mistaken impression that Ampelopsis (*Ampelopsis quinquifolia* Michx. is our common American form) opens its flowers in the same way, as he includes

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[1] Humphrey Marshall was born in the town of West Bradford, Pennsylvania, in 1722, of Quaker parents. He was a cousin of John Bartram, their mothers being sisters. Like Bartram, he had few opportunities for education, not going to school after he was twelve years of age. He was a stonemason by trade, studying botany in his leisure moments. In 1773 he started a botanic garden at Marshallton. In 1785 he published *Arbustrum Americanum, The American Grove, or An Alphabetical Catalog of Forest Trees and Shrubs, Natives of the American United States.* This work had been in preparation about five years previous to its publication. It is said to be the first botanical work of a native American. Marshall died in 1801.

[2] But little is known of the life of Thomas Walter. He was a native of Hampshire, England, and migrated to St. John's Parish, South Carolina, where he had a plantation on the Santee River. Here he died in 1788 at about the age of forty-eight years. His only publication of note is the *Flora Caroliniana*, published in the year of his death. He must have been in correspondence with European botanists of that time as his herbarium is preserved in the British Museum.

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this under Vitis. Walter gives only three species and his descriptions of these are very brief.

The first European botanist who made an extensive study of American plants in their habitats was André Michaux, a French botanist who traveled extensively in North America at about the close of the eighteenth century. In his *Flora Boreali-Americana*, which was published in 1803, he gives a brief generic description of Vitis which includes all of the essential characters given by Walter. He also questions the male and female characters mentioned by Walter.[1] Michaux mentions five species of the American grapes. His descriptions are clear and every species described can readily be recognized so that there is no question among botanists as to what species was meant in any instance.

An interesting contribution to our knowledge of the grapes of North America is that of William Bartram.[2] Bartram's opportunities for becoming familiar with these plants were probably greater than those of any other person of his day, he being a resident of America, and his father having been a botanist, so that he was trained from childhood to observe plants. The following is an extract from an article of Bartram's in the *Domestic Encyclopedia*, 1804:

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[1] Grapes are not to-day considered dioecious but polygamo-dioecious, a distinction which will be defined later.

[2] John Bartram was born near the village of Darby in Delaware (then Chester) County, Pennsylvania, in 1699. Bartram is generally credited with having established the first botanical garden in America. This garden was founded about 1728, some four miles south of what was the town of Philadelphia and is now a part of the Park System of that city. He was bred a Quaker but owing to his liberal opinions was excluded from that Society in 1758. During his life he was in correspondence with many of the leading scientific men of Europe to whom he sent many specimens of plants and other things of scientific interest. He made many trips into various parts of the colonies, to Ontario, Lake George, the Carolinas, Florida and Georgia, in search of information. The last of these journeys, that to the southern states, was made after he was seventy years of age. Bartram is blamed by all of his contemporaries for not having published more than he did. His death occurred in 1777.

William Bartram, son of John Bartram, was born in 1739 and died in 1823. Much of his work was done in connection with his father under whom he received his botanical training. His best known work is his *Travels in the Carolinas, Georgia and Florida* (1791), in which he gives an interesting account of that region, including descriptions of a number of new southern plants. His article on grapes which is here quoted was published in the *Domestic Encyclopedia*, 1804, and also in the *Medical Repository* of the same year.

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"The most obvious characters which distinguish the grape vines of America from those of the old continent are: 1. The berries of all the American species and varieties that I have seen, approach the figure of an oblate spheroid; that is, the poles are flattened, and the transverse diameter is longer than the polar: however, I have observed that Alexander's grape, and some of the *bul* or bullet grapes, approach nearer to an oval or ellipsis which is the figure of all foreign or European grapes that I have seen; viz. a prolate spheroid. 2. Most of the American species and varieties have a glaucous and yellowish pubescence on the under surface of their leaves. 3. All that I have observed in the northern and eastern districts of the United States are *polygamous;* i. e. those vines which bear fruit (female) have hermaphrodite flowers (pentandria monogynia); but the males have only five stamina, without any female organ, and are always barren. One should suppose, from WALTER so strongly marking this character as to induce him to place the Vitis in the class *Dioecia*, when Linnaeus and the other European botanists had placed it in Pentandria (he himself being an European), that all the grape vines of the old continent are hermaphroditous and Pentandrian. I know not from my own observation, whether the bull-grape of Carolina is hermaphroditous or dioecious, and therefore rest satisfied with WALTER'S assertion." Bartram gives four species.

Nuttall,[1] in his *Genera of North American Plants and Catalogue of the Species*, gives a rather stereotyped description of the genus but in addition in fine type he gives the following:

"Leaf simple and cordate, angularly or sinuately lobed, rarely digitate or pinnate (Cissus?), flowers numerous, in compound racemes, not uncom-

[1] Thomas Nuttall was born in Settle in Yorkshire, England, in 1786. He migrated to the United States in 1807, making his home in Philadelphia where he became acquainted with William Bartram and Dr. Barton. It was largely owing to the influence of these men that he turned his attention to botany. Nuttall was an extensive traveler and made botanical expeditions into many parts of the country. He explored the Middle West up to the Rocky Mountains and made a trip around the Horn to California. From 1825 to 1834 he was connected with Harvard College. In 1842 he was called to England by a bequest from an uncle left to him conditional on his residing for nine months of each year in England; compliance with this request caused a cessation of his botanical work in America. He died at Nutgrove, Lancashire, in 1859. Nuttall's first and probably greatest work was his *Genera of North American Plants and Catalogue of the Species*. published in 1818. Besides various accounts of his expeditions he made an addition of three volumes to Michaux's *Sylva* bringing that work up to six volumes.

monly producing 4, 6 and 7 petals, with a corresponding number of stamens, calix mostly entire, or obsoletely crenate, a glandulous disk surrounding the germ; tendril dichotomous, sometimes producing flowers, therefore analogous to a sterile raceme."

It is evident that Nuttall was in doubt as to the distinguishing characters between Vitis and the allied genus, Cissus. While he has the species of the two genera in the same position they would now be placed, his reference to pinnate-leaved species is somewhat misleading as no pinnate-leaved species are known to-day in either Europe or America. He uses, however, the distinguishing character between these two genera that we now accept, that is, Vitis has petals that adhere at the tops and come off in the form of a cap or calyptrum, while in Cissus the corolla does not fall off as a cap. Nuttall mentions six species as belonging to this genus: *Vitis labrusca*, *V. acstivalis*, *V. cordifolia*, *V. riparia*, *V. rotundifolia*, and *V. palmata*, with a question mark after the last species. None is described. His work is apparently a discriminating compilation of the work of earlier botanists.

Many other botanical workers wrote on this genus during the period covered and some of them did very valuable work in describing the various species but their work has not been referred to because it did not add to the knowledge of the genus as a whole.

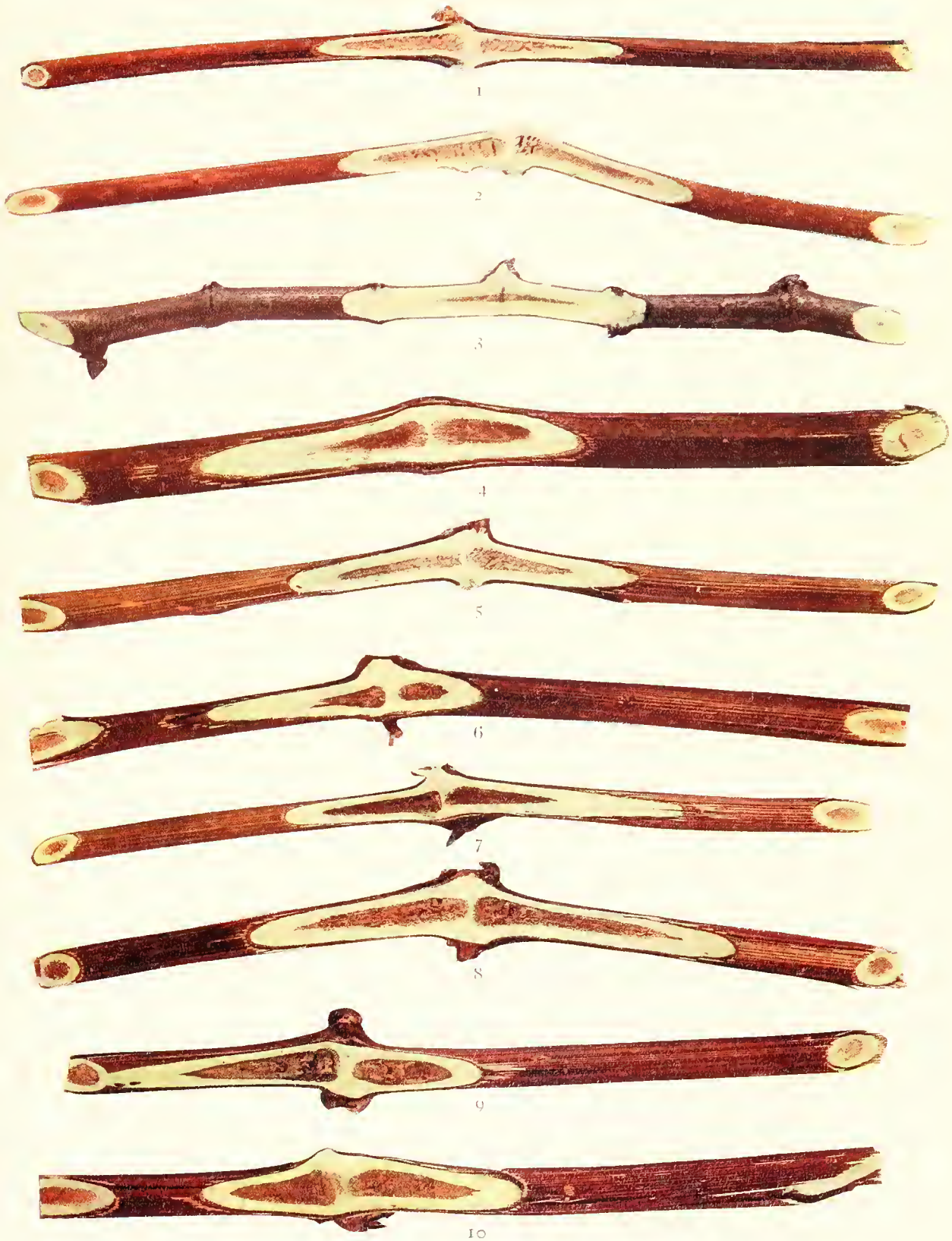
The first man to write a monograph on American grapes was Rafinesque,[1] who published in 1830 a paper bound volume entitled *American Manual of the Grape Vine*, etc. Rafinesque, who was long a resident of the United States, had an opportunity to acquire knowledge on the subject upon which he wrote second to none other. His description of the genus

[1] Constantine Samuel Rafinesque was born in Galata, a suburb of Constantinople in European Turkey, in 1783. He was of French-German descent, his father being a French merchant of Marseilles, and his mother of Saxon parentage. In 1802 he came to Philadelphia. While here he was busied with mercantile pursuits, occupying a position as clerk, but studied botany out of office hours for amusement. In 1805 he went to Sicily where he spent the next ten years. Here he commenced the extensive series of publications which have made his name so well known to scientists. In 1815 he returned to the United States, traveling about from place to place for some time and finally settling in Lexington, Kentucky, where he became a professor in Transylvania University. He left Lexington in 1825, removing to Philadelphia, where he spent the remainder of his life, dying in poverty in 1840. Rafinesque's biographer gives 420 differently titled articles on nearly all scientific subjects as the product of his pen. His monograph on grapes, entitled *American Manual of the Grape Vine and The Art of Making Wines*, etc., was published in Philadelphia in 1830.

is similar to that of his predecessors and very good; but here all similarity ends and practically all value. After having made forty-one species, the greater portion of which have names given by himself, he says: "By the above enumeration of our Grapes I have done for this genus what Michaux did for our Oaks. Owing to the great confusion of former authors, and the difficulty of comparing the leaves and fruits of all the species, it is hardly as perfect as I should wish. Rigid botanists may perhaps wish to reduce this species to a minor number or consider some as hybrids: if they can find good permanent collective characters, let them reduce our Grapes and Oaks to a dozen species. But the angular or striated branches, the long or short petioles, the oval, cordate or reniform leaves, etc., must always be deemed essential specific characters, and several of my new species, such as V. bracteata, V. angulata, V. peltata, V. canina, V. blanda, V. longifolia, V. acerifolia, V. amara, V. prolifera, etc., must be deemed very distinct." None of those of which he says "must be deemed essential specific characters" is now so considered and the species which must be "deemed very distinct" are many of them unrecognized and none of them known by the name which he gave.

Le Conte, about the middle of the last century, did much work in the botany of grapes, publishing several papers in the *Proceedings of the Academy of Natural Sciences of Philadelphia.* These were in the nature of monographs although they were not, so far as known, published separately. He gives twelve species generally taken from other authors.

A little later than Le Conte, Engelmann of St. Louis, gave his attention to the genus Vitis, clearing up a number of disputed points. His work was published in various reports and later in the *Bushberg Catalogue and Grape Manual.* Engelmann's studies are particularly valuable in that he was the first botanist working with grapes who lived in the middle west and the territory over which he ranged in his botanical expeditions was comparatively virgin. This was about the time of the reconstitution of the French vineyards by the use of American roots as stocks on which to graft their French vines to enable them to resist phylloxera. Many thousand cuttings and rooted vines of American grapes were sent to France annually for this purpose. The value of grafting on resistant stocks had stimulated an interest among French scientists in grapes generally and particularly in



1. V. bicolor
2. V. cordifolia
3. V. rotundifolia
4. V. doaniana
5. V. longii
6. V. labrusca
7. V. rupestris
8. V. riparia
9. V. vinifera
10. V. aestivalis

CANES OF SPECIES OF VITIS

the American species. While their aid in separating species was but slight, owing to their distance from the field where the plants were growing, yet the investigations of Planchon, Millardet, and others as to the comparative value of various characters in separating species, were of great importance. These investigations were utilized by Engelmann to a considerable extent. Owing to its simplicity, and somewhat perhaps to the place of publication, his work obtained favor among grape-growers to a greater extent than that of any of his predecessors. In his earlier writings he gives six species but in the last edition of the *Bushberg Catalogue* thirteen are enumerated.

Shortly after and partly coincident with Engelmann, Munson, of Texas, made valuable contributions to our knowledge of American grapes. Munson is, what none of his predecessors had been, a cultivator of grapes and a breeder of new varieties as well as a botanical student of the subject. The region in which he lived was comparatively new to botanists, and it was partly, perhaps, on this account that he raised the number of species from the thirteen given by Engelmann to twenty-five. At the present time it appears doubtful if all of these will ultimately be given specific rank. Many of them undoubtedly will, and others of them will be recognized at least as varieties. Munson is regarded to-day as the chief authority on grapes of the semi-arid and mountainous districts of the West and is one of the leading authorities on American viticulture.

The last man who has paid special attention to the grapes of North America is Bailey, of Cornell. In his latest classification he gives twenty-three species of American grapes. Bailey is the only American botanist of experience and recognized standing in general botany who has paid special attention to the grape. His monograph of the genus Vitis which, with some changes, has appeared successively in *Gray's Synoptical Flora*, *The Evolution of Our Native Fruits*, and the *Cyclopedia of American Horticulture*, is the most complete work we have on this subject. With his permission we have followed his arrangement of species in *The Grapes of New York*.

With this brief history of the formation of the genus Vitis as it now stands we pass to a consideration of the botanical characters of Vitis.

From the time when botanists first commenced to work on the grape there has been a constant search for taxonomic characters for separating

the various species clearly and distinctly. Many of the earlier descriptions, while they are correct so far as they go, do not mention enough characters to enable one to distinguish between similar species. It has been found that dependence upon the shape of the leaf, size of berry, size of plant, date of ripening, and similar characters, is very uncertain and unsatisfactory and that, while these characters are always mentioned in descriptions as indicating the intrinsic value of a species, they are of little value from a systematic standpoint. There are, however, several characters of Vitis which have great taxonomic importance.

One of the fundamental characters which determine a species is continuous or intermittent tendrils, first noticed by Professor A. Braun[1] of Berlin. *Vitis labrusca*, the common Fox grape, is peculiar in that there are tendrils, or an inflorescence, opposite nearly every leaf; this arrangement is known as *continuous tendrils*. All other species have two leaves with a tendril opposite each and a third leaf without a tendril: such species are said to have *intermittent tendrils*. Continuity of tendrils is a variable character and to ascertain which of the two forms is present it is necessary to have vigorous, healthy, typical canes. The lowest leaves of canes usually have no opposite tendrils. This character is shown in the color-plates of the several species.

A closely related character is that of the number of inflorescences borne by a species. All species excepting *Vitis labrusca* average two inflorescences to the cane but the last named species, at least in some of its subdivisions, may bear from three to six inflorescences, each of course in the place of a tendril opposite a leaf.

Professor Millardet of Bordeaux first called attention to the value of that part of the cane known as the diaphragm as a means of distinguishing species. The cane of the grape vine contains a large pith, and in most species this pith is interrupted by woody tissue at the joints; this woody tissue is the *diaphragm*. The presence or absence of the diaphragm and its thickness are of taxonomic value. In Rotundifolia, the southern Fox grape, the diaphragm is absent; in Riparia, the Riverbank grape, it is very thin; in Rupestris it is slightly thicker; while Cordifolia, Aestivalis, and Labrusca have thick diaphragms. This character is studied best in the year-old canes

[1] *Mo. Ent. Rpt.*, 1874:71.

SEEDS OF SPECIES OF VITIS

[NATURAL SIZE AND ENLARGED]

of the grape. The color-plate of canes shows the range in thickness of diaphragms as they occur in several species.

The time of flowering is of considerable value in distinguishing species. Unfortunately it requires live plants and a certain time of year in order that this character be noted. The first American species to flower is Riparia. Rupestris flowers shortly after; next, Labrusca; Aestivalis a little later, although the Lincecumii variety of Aestivalis blooms slightly before Labrusca; Cordifolia is very late in coming into bloom, and Cinerea still later. Vinifera, the European grape, blooms shortly after Labrusca. The cultivated offspring of all wild grapes retain the blooming characters of the species from which they are derived.

Other characters that have been found of great value are those connected with the seed. The ability to use the seed characters, however, cannot readily be acquired except by the use of an illustrated manual and some experience in selecting the seeds, as they are quite variable on the same plant. The weight of the seeds differs in different species, but varies so much inside the species that it is not of much value from a systematic standpoint. In general, it may be said that the Labruscas have the largest and heaviest seed of our American grapes; Riparia has the smallest seed, with Aestivalis occupying an intermediate position. The size of the seeds in Aestivalis, however, is more noticeable on account of the small size of the fruit. The color-plate illustrates the different characters to be found in grape seeds and a study of this plate with the technical descriptions of the several species will show how important seeds become in classifying grapes.

Attention is called to the characters given by Bartram as distinguishing the European from the American species. The first difference that he mentions is in the shape of the fruit, that of the Vinifera being more or less oval and that of American species roundish or oblate. Recent technical descriptions of our American species give the fruit as spherical where the shape is mentioned at all. On the other hand it is known that most of the cultivated varieties of European grapes are oval. Does this mean that all of our cultivated American varieties which show oval berries, such as Isabella, Catawba, and others, contain Vinifera blood? It could not be said without careful study that this is true but it is certainly worthy of consideration. This point seems to have escaped the attention of our later-day botanists.

The sexual status of the grape has always been a source of misunderstanding. The earlier botanists spoke of American vines as dioecious, that is, bearing staminate and pistillate flowers on separate individuals. In this, as was noted on page 98, they were corrected by Bartram, in so far as American species were concerned, he stating that the vines of America were polygamous (showing staminate and hermaphrodite plants). Bartram did not presume to speak as to the sex of the flowers of the Old World grape. Later it was determined that the cultivated varieties of Europe were always hermaphrodite and that staminate forms were unknown. Engelmann[1] explains this so well and with such apparent satisfaction that we cannot do better than quote him here. "All the true Grape-vines bear fertile flowers on one stock and sterile flowers on another separate stock, and are therefore called *polygamous*, or, not quite correctly, *dioecious*. The sterile plants do bear male flowers with abortive pistils, so that while they never produce fruit themselves, they may assist in fertilizing the others; the fertile flowers, however, are hermaphrodites containing both organs—stamens and pistils—and are capable of ripening fruit without the assistance of the male plants. Real female flowers without any stamens do not seem ever to have been observed. Both forms, the male and the hermaphrodite, or if preferred those with sterile and those with complete flowers, are found mixed in their native localities of the wild plants, but of course only the fertile plants have been selected for cultivation, and thus it happens that to the cultivator only these are known; and as the Grape-vine of the Old World has been in cultivation for thousands of years, it has resulted that this hermaphrodite character of its flowers has been mistaken for a botanical peculiarity, by which it was to be distinguished, not only from our American Grape-vines, but also from the wild grapes of the old world. But plants raised from the seeds of this as well as any other true Grape-vine, generally furnish as many sterile as fertile specimens, while those propagated by layering or by cuttings, of course, only continue the individual character of the mother-plant or stock." The accompanying plate shows various forms of grape flowers.

He further says in a foot-note: "These fertile plants, however, are of two kinds; some are *perfect hermaphrodites*, with long and straight

[1] *Bush. Cat.*, 1883:9.

FLOWERS OF VITIS

stamens around the pistil, the others bear smaller stamens, shorter than the pistil which soon bend downward and curve under it; these may be called *imperfect hermaphrodites*, approaching females, and they do not seem to be as fruitful as the perfect hermaphrodites, unless otherwise fertilized."

Beach[1] tested many of our cultivated varieties by sacking the clusters at blooming time and thus determined their capacity to fertilize themselves. From the data thus secured he divides them into four classes: 1st. Those that are able to fertilize themselves so that the clusters are perfect or varying from perfect to somewhat loose. 2d. Those in which the clusters are marketable, varying from moderately compact to loose. 3d. Clusters so loose as to be unmarketable. 4th. Those which are self-sterile or showing no fruit on covered clusters. Of 169 varieties tested, he found 38 belonging to the first class, 66 to the second class, 28 to the third, and 37 to the fourth.

Later it was found that the reason why certain varieties were self-sterile was on account of impotent and abortive pollen, the percentage of abortive pollen grains varying with different varieties and this percentage determining the degree of self-sterility. The upright or depressed stamen is not an invariable criterion of the condition of the pollen although it is usually. There are a few instances in which upright stamens bear impotent pollen but these are very exceptional. Munson made similar tests of vines of twenty-two[2] American species of vines secured from their habitats. In every case he found that they showed only two forms, the staminate vines and the self-sterile hermaphrodite, no perfect hermaphrodites being found. While of some of the species the number of vines tested was a half dozen or less, in most instances many vines were tested from different places. This is particularly interesting in that it becomes a puzzle as to where our perfectly hermaphrodite cultivated forms could have come from if such forms are not present in the wild vines of our woods and prairies.

The structure of the bark is an important distinguishing character for some species; in particular as to whether it peels off and whether in large flakes or in narrow strips or shreds. So, too, the color of the bark is often of taxonomic importance. The form and color of the leaves are often

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[1] *N. Y. Sta. An. Rpt.*, **17**:518. 1898. *N. Y. Sta. Bul.* **157**. 1898.

[2] *Tex. Sta. Bul.*, **56**:239. 1900.

considered, but these characters are variable and may be misleading. The lobing of leaves is a fairly uniform character in most species, some having lobed and others having entire leaves. As to color and texture, the upper surface of the leaf in some species is smooth, glossy and shining and in others rough and dull with varying shades of green. The lower surfaces show similar variations with the addition of varying conditions of pubescence and down or even of cobwebs. In young seedlings the shape and surfaces of the leaves are apt to be quite different from those on the old plants, a character of systematic importance with some species. The flower, as compared with this organ in other genera, is of little importance in distinguishing the species of Vitis, there being an unusual similarity in the structure and appearance of the flowers of the several species.

The number of species of Vitis is very uncertain; as, indeed, is their habitat, except that they are generally confined to the temperate or subtropical regions. Some writers give the number as less than fifty but in all territories the number seems to depend on the thoroughness with which the region has been worked over botanically, and also on the judgment of the botanist doing the work. Gray recognized four species as being indigenous to America. Engelmann in his latest publication (*Bushberg Catalogue*, 1883), thirteen, while Munson gives twenty-five. Bailey in *Gray's Synoptical Flora*, gives twenty-three species. Planchon (in 1887) gives twenty-eight species for the world. Seventeen of these are credited to America, ten to Asia, and one, the Vinifera, of unknown nativity. All of these lists, however, are known to be incomplete. Bessey[1] says that the grape is not native to the southern hemisphere, and Planchon credits none to any section south of the equator. Bailey credits two to Australia in a work not intended to cover more than those of American interest. And a correspondent[2] from that continent writes us giving a list of nineteen named and botanically described species indigenous to Australia. The number of species of grapes in the world depends upon the arbitrary limits set for a species and our knowledge of the genus is yet too meager to set these limits with certainty.

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[1] *Gar. and For.*, 8:47. 1895.

[2] W. Brennan, Gilgandra, N. S. W.

SPECIES OF AMERICAN GRAPES.

CONSPECTUS OF NORTH AMERICAN SPECIES OF VITIS.

A. Skin of mature berry separating freely from the pulp.

B. Nodes without diaphragms: tendrils simple ..... 1. **V. rotundifolia.**
2. **V. munsoniana.**

B.B. Nodes with diaphragms; tendrils forked.

C. Leaves and shoots glabrous at maturity and without bloom. Tendrils intermittent (*V. cinerea* and *V. arizonica* are partial exceptions and might be looked for under C.C.).

D. Leaves thin, light, bright green, generally glabrous below at maturity except perhaps in the axils of the veins (*V. champini* an exception) with a long or at least a prominent point and usually long and sharp teeth or the edge even jagged. (*V. bicolor* might be looked for here.)

E. Leaves broader than long; petiolar sinus usually wide and shallow. (*V. treleasei* might be sought here.) ..... 3. **V. rupestris.**

E.E. Leaves ovate in outline; petiolar sinus usually medium to narrow.

F. Diaphragms thin; young shoots not red. 4. **V. monticola.**
5. **V. riparia.**
6. **V. treleasei.**
7. **V. longii.**
8. **V. champini.**

F.F. Diaphragms thick; young shoots bright red ..... 9. **V. rubra.**

D.D. Leaves thickish, dull colored or grayish green, often holding some close dull pubescence below at maturity, shoots and leaves nearly always more or less pubescent when young; the teeth mostly short; the point mostly rectangular and conspicuous.

E. Plants strong, climbing, with stout persistent tendrils.

F. Young shoots cylindrical, glabrous or very soon becoming so ..... 10. **V. cordifolia.**

F.F. Young shoots angled, covered the first year with tomentum or wool ..... 11. **V. baileyana.**
12. **V. berlandieri.**
13. **V. cinerea.**

E.E. Plants scarcely climbing, tendrils perishing when without support ..... 14. **V. arizonica.**

D.D.D. Leaves orbicular, scallop shaped; species of the Pacific Coast ..... 15. **V. californica.**

C.C. Leaves rusty or white tomentose or glaucous blue below, thick or at least firm. (*V. cinerea*, *V. arizonica* and possibly *V. californica* might be sought here.)

D. Leaves flocculent or cobwebby or glaucous below when fully grown (i. e. not covered with a thick dense felt-like tomentum except sometimes in *V. doaniana*).

E. Shoots white tipped; ends of the growing shoots and the under surface of the leaves whitish or gray ..... **16. V. girdiana.**

17. V. doaniana.

E.E. Shoots rusty tipped; the unfolding leaves and (except in *V. bicolor*) the young shoots distinctly ferrugineous; mature leaves either rusty or bluish below or sometimes becoming green in *V. bicolor* ..... **18. V. aestivalis.**

19. V. bicolor.

20. V. caribæa.

D.D. Leaves densely tomentose or felt-like beneath throughout the season; covering white or rusty white.

E. Tendrils intermittent ..... **21. V. candicans.**

22. V. simpsoni.

E.E. Tendrils mostly continuous ..... **23. V. labrusca.**

A.A. Skin and pulp of mature berry cohering. (Old World) ..... **24. V. vinifera.**

1. VITIS ROTUNDIFOLIA Michx.[1]

1. *Trans. Am. Phil Soc.*, **1771**:339. 2. Michaux, **2**:231. 1803. *Muscadine grape.* 3. Bartram, *Dom. Enc.*, **5**:289, 290. 1804. V. TAURINA; *V. vulpina; Bull grape.* 4. Muhlenberg, **1813**:27. V. VERRUCOSA; *V. rotundifolia; Fox grape; Bull grape.* 5. Pursh, **1**:169. 1814. *Bull grape; Bullet grape.* 6. Nuttall, **1**:143. 1818. 7. Elliott, **2**:687. 1824. *V. vulpina; Fox grape.* 8. Rafinesque, **1830**:16. V. VULPINA; *V. muscadina; V. rotundifolia; V. incisa.* 9. (?)

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[1] André Michaux was a French botanist, born at Satory, Versailles, in 1746. He took up the study of botany and made many trips to foreign lands in behalf of the French Government. One of these was an expedition to North America where he remained from 1785 to 1796 exploring the country and gathering many botanical specimens through Canada, Nova Scotia and the United States as far west as the Mississippi. His chief works are *Histoire des chenes de l'Amerique Septentrionale* (*History of the Oaks of North America*), 1801; and *Flora Boreali Americana*, 1803. He described and named *Vitis rotundifolia*, *V. aestivalis*, *V. cordifolia*, *V. riparia*, and *V. rubra*, as well as giving much information on other species. Michaux died on the Island of Madagascar in 1802.

F. André Michaux was born at Versailles in 1770 and died at Vaureal in 1855. He was a son of André Michaux and also a botanist, and like his father employed by the French Government to explore North America with a view of introducing valuable plants into France. He published in 1810–13 a *Histoire des Arbres Forestieres de l'Amerique Septentrionale* which was later translated into English under the name *North American Sylva*. He also published *A Voyage a l-ouest des Monts Alleghanys*, 1804.

SHOOT OF *VITIS ROTUNDIFOLIA*

Ib., 1830:17. V. ANGULATA; *Arkansas; Bushy grape; Currant grape; False Scuppernong.* 10. Ib., 1830:17. V. VERRUCOSA; *Warty grape.* 11. (?) Ib., 1830:17. V. PELTATA; *V. Floridana.* 12. Le Conte, *Proc. Phil. Acad. Nat. Sci.*, 6:273. 1853. *V. vulpina; V. acerifolia; V. angulata; V. verrucosa; Bullace grape; Bull grape; Muscadine; Scuppernong.* 13. Weller, *U. S. Pat. Off. Rpt.*, 1853:306. SCUPPERNONG. 14. Le Conte, *Ib.*, 1857:231. *V. vulpina; V. acerifolia; V. angulata; V. verrucosa; Bullace grape; Bull grape; Muscadine; Skuppernong.* 15. White, *Horticulturist*, 12:457. 1857. *V. vulpina.* 16. Ravenel, *U. S. Pat. Off. Rpt.*, 1859:538. V. VULPINA; *V. rotundifolia; Mustang; Bullace grape; Bullet grape; Bull grape.* 17. Buckley, *U. S. Pat. Off. Rpt.*, 1861:484. *Muscadine; Bullace.* 18. Koch, *Ill. Hort. Soc. Rpt.*, 1868:81. V. VULPINA; *Muscadine; Southern Fox grape.* 19. Saunders, *U. S. D. A. Rpt.*, 1869:83, 85. *fig.* V. VULPINA; *Bullace grape.* 20. Wylie, *Jour. of Hort.*, 7:164. 1870. SCUPPERNONG; *Bullace.* 21. Ib., *Am. Pom. Soc. Rpt.*, 1871:116. SCUPPERNONG. 22. Engelmann, *Mo. Ent. Rpt.*, 1872:62. V. VULPINA; *Southern Fox grape; Bullace grape; Bullit grape; Muscadine.* 23. Ib., *Bush. Cat.*, 1883:10, 11, 13, 14, 19. V. VULPINA; *V. rotundifolia; Southern Fox grape; Bullace grape; Bullit grape; Muscadine.* 24. Bush, *Ib.*, 1883:26. *V. vulpina.* 25. Munson, *Am. Hort. Soc. Rpt.*, 1885:138. *V. vulpina; Scuppernong; Muscadine.* 26. Ib., *Am. Pom. Soc. Rpt.*, 1885:97. *Scuppernong; Muscadine.* 27. Ib., *Gar. Mon.*, 28:140. 1886. 28. Planchon, *De Candolle's Mon. Phan.*, 5:362. 1887. *Fox grape; Muscadine; Bullace; Bullet grape; V. angulata; V. vulpina?.* 29. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Muscadine.* 30. Ib., *U. S. D. A. Pom. Bul.*, 3:14. 1890. 31. Ib., *Gar. and For.*, 3:474, 475. 1890. *Muscadine.* 32. Woodworth, *Ark. Sta. An. Rpt.*, 3:93. 1890. V. VULPINA. 33. Munson, *Am. Gard.*, 12:661. 1891. 34. Bailey, *Ib.*, 14:353. 1893. *Scuppernong.* 35. Munson, *Bush. Cat.*, 1894:20, 22, 29. *V. vulpina; Muscadine; Southern Fox grape.* 36. Bailey, *Gray's Syn. Fl.*, 1:420. 1897. *Muscadine; Southern Fox grape; Bullace; Bullit; Bull grape.* 37. Britton and Brown, 2:411. 1897. *V. vulpina; Southern Fox grape; Bullace grape.* 38. Munson, *Am. Gard.*, 20:688. 1899. 39. Ib., *Tex. Sta. Bul.*, 56:219, 232, 234, 241, 272. 1900. *fig. Southern Muscadine.* 40. Earle, *Ala. Sta. Bul.*, 110:74. 1900. 41. Viala and Ravaz, *Am. Vines*, 1903:42, 43, 45. 42. Newman, *S. C. Sta. Bul.*, 132:1. 1907. *Bullis.*

Vine variable in vigor, usually very vigorous, climbing high, sometimes, when without support, shrubby and only three or four feet high; when growing in the shade often sending down aerial roots. Wood hard, bark smooth, not scaling off except in old age, with prominent warty lenticels; shoots short-jointed, angled, with fine scurfy pubescence; diaphragms absent; tendrils intermittent, simple. Leaves below medium in size, broadly cordate or roundish; petiolar sinus rather wide, usually shallow; margin with obtuse, wide teeth; not lobed; dense in texture, rather light green color, glabrous above, glabrous or sometimes pubescent along veins below. Cluster small (6–24 berries), loose; peduncle short; pedicels short, rather thick. Berries large, globular or somewhat oblate, black or greenish-yellow; skin usually thick, tough, and with a musky odor; pulp rather tough; ripening unevenly and dropping as soon as ripe. Seeds two to four, very large to medium, shaped something like a coffee-berry, somewhat flattened, shallowly and broadly notched; beak very short; chalaza rather narrow, slightly depressed with radiating ridges and furrows; raphe a narrow groove. Leafing, flowering and ripening fruit very late. (See Plate.)

Rotundifolia, or the southern Fox grape, seems to have attracted the attention of travelers in America from an early period. The references

made in the journals of the explorers of colonial times can frequently be recognized as pertaining to this species. Rotundifolia seems to have escaped the attention of botanists, however, until the time of Michaux, who named and described it. Possibly the reason for its being overlooked was because of the supposition that this was the species Linnaeus had described under the name Vulpina.[1] The uncertainty as to who first described Rotundifolia created a confusion that was not definitely cleared up for nearly a hundred years and was responsible for the fact that half the botanists called it *Vitis rotundifolia* and a nearly equal number *Vitis vulpina*. Rafinesque, in 1830, described some three or four species within the bounds of what is now known as *Vitis rotundifolia*. None of these, however, has been accepted by later botanists.

The habitat of this species is southern Delaware, west through Tennessee, southern Illinois, southeastern Missouri, Arkansas (except the northwestern portions), to Grayson County, Texas, as a northern and western boundary, to the Atlantic Ocean and the Gulf on the east and south. It becomes rare as one approaches the western limit but is common in many sections of the great region outlined above, being most abundant on sandy, well-drained bottom lands and along river banks and in swamps, thick woodlands and thickets.

Vitis rotundifolia has for years been the favorite grape in many sections of the South. This is largely due, no doubt, to the fact that they have been usually compared with Labrusca or Labrusca-Vinifera varieties of northern origin which are not well adapted to southern conditions. With the introduction of native varieties of "bunch grapes"[2] of merit, the southern species may lose in popularity. It must be said, considering the fact that southern agricultural literature has been filled with recommendations of Rotundifolia grapes for nearly a century, that the cultivation of varieties of this species is comparatively limited.

The climate most suitable for Rotundifolia is that in which cotton grows and it thrives best in the lower portions of the cotton belt of the United States. On account of the late ripening of the fruit it requires a

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[1] For discussion of *Vitis vulpina* see foot-note under *Vitis riparia*.

[2] All grapes, other than the Rotundifolia, are in the South known as "bunch grapes" because they are sold on the market in clusters, the Rotundifolia being sold off the stems.

long season. Vines of Rotundifolia have been known to withstand a winter temperature as low as 12 degrees below zero, but under ordinary conditions this would undoubtedly be much too severe for most Rotundifolias. They do not suffer from the effects of hot summers but will not withstand drouth and are not well adapted to semi-arid conditions. All growers of varieties of this species agree that it does best on light sandy or alluvial soils; and while it may grow on rather heavy clays, if all other conditions are favorable, its vigor will be lessened.

The fruit of Rotundifolia is very characteristic. The skin is thick, has a leathery appearance, adheres strongly to the underlying flesh, and is marked with lenticel-like russet dots. The flesh is more or less tough but the toughness is not localized around the seed as in the case of Labrusca. The fruit and must of all the varieties of the species are characterized by a strong, musky aroma and are lacking in sugar and acid. Some varieties yield over four gallons of must per bushel. Wine-makers are divided in opinion as to its value for wine-making, but at present the most promising outlook for Rotundifolia varieties is as wine grapes. Rotundifolia does not produce fruit suitable for the table chiefly because the berries ripen unevenly and when ripe drop from the cluster. The common method of gathering the fruit of this species is to shake the vines at intervals so that the ripe berries will drop on sheets spread below the vines. The juice which exudes from the point where the stem is broken off causes the berries to become smeared and gives them an unattractive appearance. Owing, however, to the tough skin, the berries do not crack as badly as other grapes would under the same conditions but still they are not adapted to long distance shipments.

Under reasonably favorable conditions the vines attain great age and great size, and when grown on arbors, as they usually are, and without pruning, they cover a large area. The vines are planted from fifteen to forty feet apart in the vineyard, and the first year or two are trained to posts. Later the tops of these posts are connected by cross-bars and an arbor is thus formed. Pruning usually consists of removing dead wood but a few growers have always taken exception to the customary non-pruning method of treating the Rotundifolia. Lately Newman, of South

Carolina, has published a bulletin[1] in which he recommends that the vines be pruned and raised on a trellis as is customary with other grapes. He gives figures to show that the damage to Rotundifolia vines is due to the bleeding that follows pruning and that this bleeding may be obviated by pruning in the fall or early winter. The success of such a practice would undoubtedly place the culture of Rotundifolia varieties on a better commercial footing.

Rotundifolia is remarkably resistant to the attacks of all insects and to fungal diseases. The phylloxera do not attack its roots and it is considered as resistant as any other, if not the most resistant of all American species. It is grown from cuttings only with difficulty. However, under favorable circumstances, and with skilful handling, this is a successful method of propagation. Under unfavorable circumstances, or where only a few vines are desired, it is better to depend on layers. As a stock upon which to graft other vines this species has not been a success. Wylie found great difficulty in crossing Rotundifolia with other species, and the crosses did not thrive under cultivation. Lately Munson has introduced several Rotundifolia hybrids.

2. VITIS MUNSONIANA Simpson.

1. (?) Rafinesque, 1830:17. V. PELTATA; *V. Floridana*. 2. Munson, *Am. Pom. Soc. Rpt.*, 1885:07. V. FLORIDANA; *Florida grape*. 3. Ib., *Gar. Mon.*, 28:140. 1886. V. FLORIDANA; *V. peltata; Florida grape*. 4. Ib., *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Everbearing grape*. 5. Ib., *Gar. and For.*, 3:474, 475. 1890. 6. Ib., *U. S. D. A. Pom. Bul.*, 3:14. 1890. 7. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. *Bird grape; Everbearing grape*. 8. Ib., *Bush. Cat.*, 1894:20. *Bird grape; Mustang grape* of Chapman. 9. Bailey, *Gray's Syn. Fl.*, 1:421. 1897. *Mustang grape* of Florida; *Bird grape; Everbearing grape*. 10. Munson, *Tex. Sta. Bul.*, 56:232, 241. 1900. *Florida Bird grape*. 11. Viala and Ravaz, *Am. Vines*, 1903:42, 45.

Vine not very vigorous, a slender grower, usually running on the ground or over low bushes. Canes slightly angular; internodes short; tendrils intermittent, simple. Leaves smaller and thinner than Rotundifolia and rather more circular in outline; not lobed; teeth rather open and spreading; petiolar sinus V-shaped; both surfaces smooth, rather light green. Cluster with more berries but about the same size as Rotundifolia. Berry one-third to one-half the diameter, with thinner and more tender skin; black,

[1] *S. C. Sta. Bul.* 132. 1907.

shining; pulp less solid, more acid and without muskiness. Seeds about one-half the size of Rotundifolia, similar in other respects. Leafing, flowering, and ripening fruit very late.

In 1830 Rafinesque described, under the name *Vitis peltata*, or *Vitis floridana*, "a very singular species, lately found in Florida." This description is brief and includes many characters of no taxonomic value. In 1885 or 1886, Mr. J. H. Simpson of Manatee, Florida, sent a specimen of a grape growing in his locality to Munson which was taken to be Rafinesque's *Vitis peltata*. He consequently described it under the name *Vitis floridana* but the species was not generally accepted. Later Simpson gave it the name *Vitis munsoniana*.

Its habitat is central and southern Florida and the Florida Keys, and it is said to be the only grape growing on these Keys. It extends south of the habitat of Rotundifolia and blends into this species at their point of meeting.

Munsoniana appears to be a variation of Rotundifolia, fitted to subtropical conditions. It is tender, not enduring a lower temperature than zero. In the matter of multiplication it differs from *Vitis rotundifolia* in that it can be propagated readily from cuttings. Like Rotundifolia it is resistant to phylloxera. The species is of no value horticulturally.

3. VITIS RUPESTRIS Scheele.

1. Scheele, *Linn.*, **21**:591. 1848. **2.** Ravenel, *U. S. Pat. Off. Rpt.*, **1859**:539. *Mountain grape* of Texas. **3.** Buckley, *Ib.*, **1861**:485. *Rock grape.* **4.** Prince, *Gar. Mon.*, **5**:73. 1863. *Bush grape* of Texas. **5.** Engelmann, *Mo. Ent. Rpt.*, **1872**:61. *Sand grape; Sugar grape.* **6.** Jaeger, *Mo. Hort. Soc. Rpt.*, **1883**:41. **7.** Engelmann, *Bush. Cat.*, **1883**:10, 11, 12, 14, 18. *Rock grape; Sand grape; Sugar grape.* **8.** Bush, *Ib.*, **1883**:21, 26. **9.** Munson, *Am. Hort. Soc. Rpt.*, **1885**:132. *Sand-beach grape; Sugar grape.* **10.** Campbell, *Am. Pom. Soc. Rpt.*, **1885**:84. **11.** Munson, *Ib.*, **1885**:97, 98. **12.** Ib., *Soc. Prom. Ag. Sci. Rpt.*, **1887**:59. *Sugar grape; Sand grape; Beach grape.* **13.** Planchon, *De Candolle's Mon. Phan.*, **5**:323, 346. 1887. *Sand grape; Sugar grape; Mountain grape.* **14.** Munson, *Gar. and For.*, **3**:474. 1890. **15.** Ib., *U. S. D. A. Pom. Bul.*, **3**:7, 9. 1890. **16.** Ib., *Am. Gard.*, **12**:659. 1891. **17.** Ib., *Mich. Hort. Soc. Rpt.*, **1893**:116. *Rock grape; Sand grape.* **18.** Munson, *Bush. Cat.*, **1894**:20, 22. **19.** Husmann, **1895**:110, 188. **20.** Britton and Brown, **2**:411. 1897. *Sand grape; Sugar grape.* **21.** Bailey, *Gray's Syn. Fl.*, **1**:421. 1897. *Sand grape; Sugar grape; Rock grape; Bush grape; Mountain grape.* **22.** Beach, *N. Y. Sta. An. Rpt.*, **17**:537, 557. 1898. **23.** Munson, *Tex. Sta. Bul.*, **56**:234, 235, 239, 259. 1900. *Rock grape.* **24.** Viala and Ravaz, *Am. Vines*, **1903**:42, 82.

Small, much branched shrub or sometimes, under favorable circumstances, slightly climbing. Diaphragm thin but slightly thicker than Riparia; tendrils few, or, if present, weak, usually deciduous. Leaves rather small; young leaves frequently folded on midrib; broadly cordate or reniform, wider than long, scarcely ever slightly lobed, smooth, glabrous on both surfaces at maturity; petiolar sinus wide, shallow; margin rather coarsely toothed, frequently a sharp abrupt point at terminal. Cluster small. Berries small, usually larger than Riparia, color black or purple-black. Seeds small, not notched; beak short, rather blunt; raphe slightly distinct to indistinct, usually showing as a narrow groove; chalaza of medium size, pear-shaped, sometimes distinct, but usually a depression only. Leafing, blossoming, and ripening early (blossoming soon after Riparia).

Rupestris seems to have been first described and named by Scheele in 1848 in a contribution on the flora of Texas to the periodical *Linnaea*. Ravenel, in 1859, states that this grape is found in Texas and is there known as the Mountain grape. It was mentioned and described by Buckley, Engelmann, and all of the later botanists. (See Plate.)

This species is an inhabitant of southwestern Texas, extending eastward and northward into New Mexico, southern Missouri, Indiana and Tennessee to southern Pennsylvania and the District of Columbia. Its favorite places are gravelly banks and bars of mountain streams or the rocky beds of dry water-courses. Rupestris is usually considered drouth-resistant but Munson states that it is short-lived in the upland sandy soils in northern Texas, where, owing to long droughts, the land dries out deeply. Here, he says, it is not so successfully resistant to drouth as Lincecumii.[1]

This species is quite variable both in type and growth. It was introduced into France at about the same time as Riparia, and the French vineyardists selected the most vigorous and healthy forms for grafting stock. These pass under the various names of Rupestris Mission, Rupestris du Lot, Rupestris Ganzin, Rupestris Martin, Rupestris St. George, and others. In France they are stated to have given particularly good results on bare, rocky soils with hot, dry exposures. In California, Husmann[2] states, "It does not flourish in dry locations here, and as it suckers profusely and does not take the graft as readily as the two former classes [Riparia and Aestivalis], it is not largely propagated." It has not been

[1] *Bush. Cat.*, 1894:22.

[2] Husmann, 1895:188.

RUPESTRIS DU LOT

sufficiently cultivated in this country east of the Rocky Mountains so that it can be said what conditions of soil and climate best suit this species other than the general conclusions that may be drawn from the conditions present where the species is indigenous.

The clusters of fruit are small, with berries about the size of a currant and varying from sweet to sour. The berry is characterized by much pigment under the skin. The fruit has a sprightly taste wholly free from any disagreeable foxiness. According to Munson, it is too unproductive to be profitable. The sugar and acid content of the must is not known. Jaeger states that Rupestris wine sent to France was there judged as decidedly the best American claret yet tested.

Rupestris under cultivation is said to be very resistant to rot and mildew of the foliage. It is considered hardy by those familiar with it in the Southwest, and Campbell states that it withstood, without injury, 32 degrees below zero at Delaware, Ohio. The attention of hybridizers was attracted to this species over thirty years ago and various hybrids have been produced by Jaeger, Munson, Campbell and Millardet, all of whom considered Rupestris of great promise for grape-breeding. The root system of Rupestris is peculiar in that the roots penetrate at once deeply into the ground instead of extending laterally as in other species. Like those of Riparia, the roots are slender, hard, and resistant to the phylloxera. The species is easily propagated by cuttings. According to Husmann[1] the vines bench-graft readily but are difficult to handle in field grafting.

VITIS RUPESTRIS DISSECTA Eggert.

1. Bailey, *Gray's Syn. Fl.*, 1:422. 1897. V. RUPESTRIS, var. DISSECTA.

Vitis rupestris dissecta was named by H. Eggert of St. Louis, the name being placed on herbarium specimens but apparently not published by him. According to Bailey it differs from the typical forms of the species in having "more ovate leaves and very long teeth, and a strong tendency towards irregular lobing." It is found in Missouri.

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[1] Husmann, G. C., *California Fruit Grower*, Mar. 14, 1908

4. VITIS MONTICOLA Buckley.[1]

1. Buckley, *Proc. Phil. Acad. Nat. Sci.*, 1861:450. 2. Ib., *U. S. Pat. Off. Rpt.*, 1861:485. *White grape; Mountain grape.* 3. Engelmann, *Bush. Cat.*, 1883:10, 12, 14, 15, 16. *Mountain grape* of West Texas. 4. Munson, *Am. Hort. Soc. Rpt.*, 1885:134. *Mountain grape.* 5. Ib., *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Mountain grape.* 6. Ib., *U. S. D. A. Pom. Bul.*, 3:13. 1890. *V. Texana.* 7. Ib., *Gar. and For.*, 3:474, 475. 1890. 8. Ib., *Am. Gard.*, 12:586. 1891. *Sweet Mountain grape.* 9. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. 10. Bailey, *Gray's Syn. Fl.*, 1:422. 1897. *Sweet Mountain grape.* 11. Munson, *Tex. Sta. Bul.*, 56:230, 232, 234, 239, 260. 1900. *Sweet Mountain grape.* 12. Viala and Ravaz, *Am. Vines*, 1903:42, 96.

Vine of moderate vigor, climbing, or, in the absence of support, frequently shrubby. Canes very slender; shoots angled, more or less pubescent; diaphragms medium to rather thin; tendrils medium in size, intermittent, usually bifid, deciduous. Leaves with stipules short, broad; leaf-blade small and thin, cordate, entire, notched or shortly three-lobed; petiolar sinus rather deep and medium to narrow in width, sometimes overlapping, rounded;. margin broadly and obtusely toothed; apex usually acuminate; upper surface smooth, glossy; lower surface grayish-green, more or less pubescent when young; pubescence confined chiefly to ribs and veins. Clusters short and broad, compact, with medium to short peduncle. Berries medium to below in size, black or gray with thin bloom. Seeds large, usually slightly notched; chalaza rather narrow; raphe a groove. Leafing, flowering, and ripening fruit very late.

Vitis monticola was named and described by Buckley in 1861. There seems to have been some misunderstanding by later botanists as to exactly what Buckley's species of this name is, and in spite of what has been written on the subject, it seems as though some of the botanists are still describing different species. The seed, in Engelmann's figure, resembles that of the Rupestris very closely, while as figured by Viala the seeds resemble those of Cinerea or Cordifolia.

Monticola inhabits the limestone hills of central and southwestern Texas.

The fruit of this species has a very sweet and somewhat peculiar flavor.

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[1] Samuel Botsford Buckley was born in 1809, in Yates County, New York, and was educated at Wesleyan University, where he graduated in 1836. In 1866 he was appointed State Geologist of Texas where he resided until he died in 1884. Buckley traveled extensively in connection with his work, explored the southwestern region of the Appalachian Mountains, as well as the southwestern portion of the United States. He was at great disadvantage in his publications in that they were prepared without the benefit of a library. His articles on grapes were published in the *Proceedings of the Philadelphia Academy of Natural Sciences* for 1861, and in the *United States Patent Office Report* for the same year.

The vines can be propagated from cuttings only with difficulty. The species is adapted to a hot, dry climate and limestone land. It is found to be very resistant to phylloxera and is sometimes recommended as a stock for Vinifera but is not generally considered as valuable in this respect as Berlandieri. It is without value for its fruit and is of no horticultural importance to the eastern American grape-grower.

5. VITIS RIPARIA[1] Michx.

1. Tournefort, *Inst. Rei Herb.*, 1:613. 1700. V. CANADENSIS ACERIS FOLIO. 2. (?) Linnaeus, *Sp. Pl.*, 1753:203. V. VULPINA. 3. (?) Walter, 1788:242. V. VULPINA. 4. (?) Willdenow, 1:1181. 1797. V. VULPINA. 5. Michaux, 2:231. 1803. 6. (?) Bartram, *Dom. Enc.*, 5:291. 1804. V. SEROTINA; *Winter grape.* 7. Pursh, 1:169. 1814. *V. odoratissima.* 8. Nuttall, 1818:143. 9. Elliott, 2:688. 1824. *Winter grape?* 10. Torrey, *Fl. of N. & M. Sta.*, 1826:121. 11. Rafinesque, 1830:15. *River grape; Bermuda vine; Mignonette vine.* 12. Ib., 1830:16. V. ODORATISSIMA. 13. Prince, 1830:193. *V. odoratissima; Sweet scented.* 14. Torrey, *Fl. of N. Y.*, 1:147. 1843. *Winter grape.* 15. Le Conte, *Trans. Phil. Acad. Nat. Sci.*, 6:273. 1853. *V. dimidiata.* 16. Ib., 6:272. V. VULPINA; *V. aestivalis* of some; *V. cordifolia* of many; *V. callosa; V. hyemalis; Winter grape.* 17. Buckley, *U. S. Pat. Off. Rpt.*, 1861:483. V. CORDIFOLIA, var. RIPARIA. 18. Saunders, *U. S. D. A. Rpt.*, 1869:82, 85, 87. V. CORDIFOLIA, var. RIPARIA. 19. Engelmann, *Mo. Ent. Rpt.*, 1872:61. 20. Ib., *Bush. Cat.*, 1883:10, 11, 12, 14, 18. *Riverside grape.* 21. Bush, *Ib.*, 1883:23. 22. Munson, *Am. Pom. Soc. Rpt.*, 1885:97, 98. *Riverside grape.* 23. Ib., *Am. Hort. Soc. Rpt.*, 1885:131. *Riverside grape.* 24. Ib., *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Riverside grape.* 25. Planchon, *De Candolle's Mon. Phan.*, 5:323, 352. 1887. *V. vulpina; V. incisa; V. intermedia; V. odoratissima; V. Virginiana; V. Canadensis aceris folio.* 26. Munson, *U. S. D. A. Pom. Bul.*, 3:9. 1890. 27. Ib., *Gar. and For.*, 3:474. 1890. 28. Bailey, *Am. Gard.*, 14:353. 1893. *fig.* V. VULPINA; *V. riparia.* 29. Husmann, 1895:175. V. CORDIFOLIA. 30. Ib., 1895:188. 31. Britton and Brown, 2:410. 1897. *fig.* V. VULPINA; *V. riparia; V. cordifolia*, var. *riparia; Riverside grape; Sweet scented grape.* 32. Bailey, *Gray's Syn. Fl.*, 1:422. 1897. V. VULPINA; *Riverbank; Frost; V. riparia; V. serotina; V. odoratissima; V. Illinoensis?; V. Missouriensis?; V. tenuifolia?; V. cordifolia*, var. *riparia; V. vulpina*, var. *riparia.* 33. Munson, *Tex. Sta. Bul.*, 56:218, 219, 230,

[1] The description of *Vitis vulpina* by Linnaeus is so meager, including the leaves only, that for many years botanists were in doubt as to the species intended. Muhlenberg was the single exception when he gave Linnaeus' Vulpina and Michaux's Cordifolia as synonymous. Whether he did this from knowledge, or whether it was by chance, it is impossible to say. He states no reasons and consequently received no following among other botanists. Elliott supposed that Linnaeus intended to describe the southern Rotundifolia and this view seems to have been generally accepted.

In the late eighties or early nineties, Planchon first, and later Britton, by referring to Linnaeus' specimens, determined that the latter's Vulpina was the same as Riparia, and in accordance with botanical rules, presented the name Vulpina as the correct name for this species. Bailey, however, states (*Ev. Nat. Fr.*, 1898:102) that he found two specimens in the Linnaeus collection labeled Vulpina, one of which was the true Riparia and the other Cordifolia. Since a change of the name would bring confusion to more than ninety years of botanical and horticultural literature, it seems inadvisable to make one on such contradictory evidence.

239, 260. 1900. V. VULPINA; *Riverside; V. riparia.* 34. Viala and Ravaz, *Am. Vines*, 1903:42, 104.

Vine vigorous to very vigorous, climbing. Shoots cylindrical or slightly angled, usually smooth, slender; diaphragms thin; tendrils intermittent, slender, usually bifid. Leaves with large stipules; leaf-blade medium to large, thin, entire, three, or lower ones often five-lobed; sinuses shallow, angular; petiolar sinus broad, usually rather shallow; margin with incised, sharply serrate teeth of variable size; of a light green color, glabrous above, usually glabrous but sometimes slightly pubescent on ribs and veins below. Cluster medium to small, generally compact, shouldered; peduncle short. Berries small to medium, black with a heavy blue bloom. Seeds usually two to four, small, usually slightly notched, short, plump, with very short beak; chalaza narrowly oval, depressed, indistinct; raphe usually a groove, sometimes slightly distinct. Very variable in flavor and time of ripening. (See Plate.)

The first mention we have of *Vitis riparia* is by Tournefort in 1700, who, without further description, calls it *Vitis canadensis aceris folio*, or Maple-leaved Canadian grape.[1] Linnaeus in 1753 described mixed specimens of Cordifolia and Riparia under the name of *Vitis vulpina*. His description is as follows:[2] "Leaves cordate, dentate-serrate, glabrous on both sides." Walter and Willdenow copy the description of Linnaeus. The first description which is clear, and the identity of which has never been questioned, is that of Michaux in 1803, under the name Riparia. He says: "Leaves unequally and sharply dentate, slightly 3-lobed. Petioles, veins and margins pubescent. Called by French residents *Vigne des battures*. Habitat along the banks and on the islands of the Ohio and Mississippi rivers, etc." Bartram, in 1804, under the name of *Vitis serotina*, or Winter grape, describes a vine which may be Riparia or may be Cordifolia as it has some of the characters of both.

Linnaeus' description seems to have thoroughly confused all of the earlier botanists. They were in doubt, first, as to what species was intended for Vulpina; second, as to the distinguishing characters between Riparia and Cordifolia. Gray classed Riparia as a variety of Cordifolia. Engelmann was the first to draw attention to the specific characters which separated these two sorts and these he gives as follows: 1st. Riparia has thin diaphragms, Cordifolia thick. 2d. Riparia blooms early, Cordifolia

[1] Planchon is our authority for calling this Riparia.

[2] Translation from the Latin.

SHOOT OF *VITIS RIPARIA*

late. 3d. Riparia propagates readily from cuttings, Cordifolia only with difficulty. 4th. Seeds of the Riparia have indistinct or almost indistinct, depressed chalaza and raphe, while the the chalaza and raphe of the Cordifolia seeds are elevated and distinct. To these Bush[1] added the further distinguishing character that on the shoots the small terminal leaves of the Cordifolia open as soon as formed, while those of Riparia remain folded for some days after they are formed, become larger and then expand gradually.

Riparia is the most widely distributed of any American species of grape. It has been found in parts of Canada north of Quebec and from thence southward to the Gulf of Mexico. It is found from the Atlantic coast westward, most botanists say to the Rocky Mountains, but Munson gives the western limit as Salt Lake. Since Munson is more familiar with the district lying west of the Rocky Mountains than any other botanist who has paid attention to grapes, he is probably correct. Usually it is found on river banks, on islands or in upland ravines.

Riparia has always been considered of great promise in the evolution of American grapes. It can hardly be said that it has fulfilled expectations, there probably being no pure variety of this species of more than local importance, and the results of hybridizing it with other species have not been wholly successful. The reason why attention was early turned to Riparia was because of the qualities presented by the vine rather than those of the fruit, particularly its hardiness and vigor. However, both of these qualities are quite variable, and it is only reasonable to suppose that in such a widely distributed species, plants found in a certain region would have adapted themselves to the conditions there present; thus it should be expected that the northern plants would be more hardy than those

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[1] Isadore Bush was born at Prague, Bohemia, in 1822. Bush was one of those Germans who, taking part in the troubles of the Fatherland in 1848, found it necessary to seek a home in the New World. He went to Missouri upon his arrival in the country and there spent the remainder of his life. During the Civil War he was secretary to General Frémont and at various times occupied many other positions of trust. He established the Bushberg nursery which for many years was the leading grape nursery of this country. With the aid of Engelmann and others he wrote the *Bushberg Catalogue and Grape Manual*, a work which has passed through many editions and has probably been more popular and useful than any other book on American grapes published in the English language. Bush died in St. Louis in 1898, having been a citizen of that place for forty-nine years.

from the South and the western prairie forms more capable of resisting drouth than those from humid regions; this is found to be the case. It is consequently impossible to say what conditions best suit this species; it may be said, however, that it is adapted to a great variety of soils and locations; Riparia vines, or certain ones of them, have withstood a temperature of 40 to 60 degrees below zero and they show equal ability in withstanding the injurious effects of high temperatures in the summer. On account of its habit of early blooming, the blossoms sometimes suffer from late frosts in the spring.

While Riparia is not a swamp grape and is not found growing under swampy conditions, it is fond of water. In the semi-arid regions always, and in humid regions usually, it is found growing along the banks of streams, in ravines, on the islands of rivers, and in wet places. It is not nearly so capable of withstanding drouth as Rupestris. Riparia likes a rather rich soil but in France has been found to do poorly on limestone land and calcareous marls. The French tell us, however, that this is a characteristic of all our American grapes and that the Riparia is more resistant to the injurious effects of an excess of lime than either Rupestris or Aestivalis.

As was noted in the botanical description, the fruit of Riparia is usually small, there being occasional varieties of medium size or slightly above. The clusters are of medium size and, if judged from the standpoint of number of berries, might frequently be called large. The flavor is usually sharply acid but free from foxiness or any disagreeable wild taste. If eaten in quantity, the acidity is apt to affect the lips and end of the tongue. When the acidity is somewhat ameliorated, as in the case of thoroughly ripe or even overripe and shriveled fruit, the flavor is much liked by many people. The flesh is neither pulpy nor solid and dissolves in the mouth and separates readily from the seed. The must of Riparia is characterized by an average amount of sugar, varying considerably in the fruit from different vines, and by an excess of acid. There is no disagreeable aroma, or foxiness, in the juice of this species, but the wines made from pure must of Riparia grapes, unless kept for a long time, or otherwise treated, are too sour. On this account many recommend adding sugar and water to the must to reduce the percentage of acid.

Riparia is very resistant to phylloxera, the roots are small in size, hard and numerous and branch freely. The roots feed close to the surface and do not seem to be well adapted to forcing their way through heavy clays or a hardpan formation; but as such soils are unfavorable for all grapes, this character is of little economic importance. Riparia grows readily from cuttings and makes a good stock for grafting, and its union with other species is usually permanent. At the time when Riparias were first sent to France to be used as a stock in reconstituting the French vineyards, it was found that many of the vines secured from the woods were of too weak growth to support the stronger-growing Viniferas. On this account the French growers selected the more vigorous forms of the Riparias sent them to which they gave varietal names, as Riparia Gloire, Riparia Grand Glabre, Riparia Scribner, Riparia Martin and others. With these selected Riparias the graft does not outgrow the stock. Riparia is less resistant to rot than Aestivalis but somewhat more resistant than Labrusca. The foliage is rarely attacked by mildew. One of the chief failings of this species is the susceptibility of the leaves to the attack of the leaf-hopper. This defect is quite serious in some grape-growing regions. The Riparias are generally late in ripening and it is found that the fruit is better in quality in long seasons and that it should be left on the vines as late as possible. There are some early ripening varieties of this species, however.

VITIS RIPARIA PRÆCOX Engelmann.

1. Prince, 1830:194. V. ODORATISSIMA; *June Grape.* 2. Engelmann, *Mo. Ent. Rpt.*, 1872:61. 3. Ib., *Bush. Cat.*, 1883:18. JUNE GRAPE. 4. Bailey, *Am. Gard.*, 14:353. 1893. V. VULPINA, var. PRÆCOX; *June Grape:* V. *riparia*, var. *præcox.* 5. Ib., *Gray's Syn. Fl.*, 1:422. 1897. V. VULPINA, var. PRÆCOX; *June Grape.*

The first record of Riparia Præcox is a statement by Prince in 1830 that Nuttall had told him that the June Grape growing on the Mississippi was the true *Vitis odoratissima* (a sweet scented Riparia which later botanists have not recognized as a distinct species). In 1872 Engelmann refers to it, saying that it grows on rocky river banks in the vicinity of St. Louis and that it is brought to market in July. He says further in the *Bushberg Catalogue* that from the first of July on, ripe fruit is to be found through August and September. Bailey states in the *American Gardening* that

Engelmann in his herbarium had given this variety the name *præcox* but did not know whether it had been published or not.

The variety differs from the typical form of Riparia only in the ripening season and possibly in the berries averaging smaller. The early ripening season might make it of horticultural importance as a breeding stock although in other respects the fruit characters are not such as would recommend it.

6. VITIS TRELEASEI Munson.[1]

1. Bailey, *Gray's Syn Fl.*, 1:423. 1897. 2. Munson, *Tex. Sta. Bul.*, 56:230, 239. 1900. *Smooth Canyon Grape.*

Plant shrubby and much branched, climbing little, the small and mostly short (generally shorter than the leaves) tendrils deciduous the first year unless finding support, internodes short, the diaphragms twice thicker (about 1-16 inch) than in *V. riparia* and shallow-biconcave; stipules less than one quarter as large as in *V. riparia;* leaves large and green, very broad-ovate or even reniform-ovate (often wider than long), thin, glabrous and shining on both surfaces, the basal sinus very broad and open making no distinct angle with the petiole, the margin unequally notch-toothed (not jagged as in *V. riparia*) and indistinctly three-lobed, the apex much shorter than in *V. riparia;* * * * cluster small (2 to 3 inches long); the berries ⅓ inch or less thick, black with a thin bloom, ripening three weeks later than *V. riparia* when grown in the same place, thin-skinned; pulp juicy and sweet; seeds small. * * * Little known, and possibly a dry country form of *V. riparia.* In habit it suggests *V. arizonica* var. *glabra,* from which it is distinguished, among other things, by its decidedly earlier flowering and larger leaves with coarser teeth and less pointed apex.

According to Munson *Vitis treleasei* inhabits "ravines and gulches of western New Mexico, Arizona and southern Utah." This species was named by Munson but the only description we have been able to find is

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[1] Thomas Volney Munson, the well-known nurseryman, viticulturist, and plant-breeder, was born near Astoria, Illinois, September 26, 1843. He graduated from Kentucky University, Lexington, Kentucky, in 1870. His nursery has for thirty-one years been located at Denison, Texas. Munson has introduced more hybrid grapes than any other man in America and probably in the world. He has paid great attention to grape botany, particularly to the southwestern species. Monographs on grapes, from his hand, have appeared in the proceedings of various horticultural societies and in horticultural journals. Bulletins written by him have been issued by the United States Department of Agriculture and the Texas Experiment Station. He has at present a book ready for publication entitled *Foundations of American Grape Culture.* The varieties produced by Munson are particularly successful in the Southwest where conditions are such that most of our northern varieties fail. The most valuable of those that have been thoroughly tested are Brilliant, America, Carman, Gold Coin and Rommel.

that of Bailey given above in which we have changed his "*vulpina*" to "*riparia*." The species is of no importance horticulturally.

7. VITIS LONGII Prince.[1]

1. Prince, 1830:184. *Long's Arkansas.* 2. Engelmann, *Bush. Cat.*, 1883:18. LONG'S; *V. Solonis.* 3. Munson, *Am. Hort. Soc. Rpt.*, 1885:132. V. NUEVO MEXICANA; *Wooly Riparia.* 4. Ib., *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. V. NOVO MEXICANA; *Munson's Riparia.* 5. Ib., *Gar. and For.*, 3:474. 1890. V. SOLONIS. 6. Ib., *U. S. D. A. Pom. Bul.*, 3:9. 1890. V. SOLONIS. 7. Ib., *Am. Gard.*, 12:660. 1891. V. SOLONIS. 8. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. V. SOLONIS; *Bush grape.* 9. Ib., *Bush. Cat.*, 1894:20, 22, 24. V. SOLONIS; *Sand grape; Beach grape; Bush grape.* 10. Bailey, *Gray's Syn. Fl.*, 1:423. 1897. *V. Solonis; V. Nuevo Mexicana; Long's.* 11. Beach, *N. Y. Sta. An. Rpt.*, 17:537, 557. 1898. V. SOLONIS. 12. Munson, *Tex. Sta. Bul.*, 56:218, 230. 1900. *V. Solonis, Gulch grape; Bush grape.*

Vitis longii is a vigorous form of the Riparia type with pubescent young growth, differing from the typical Riparia in having more circular, less lobed leaves and more incised teeth. Its leaves are frequently pubescent beneath. Another form with dentate margin of leaf has been known under the name of Nuevo Mexicana or Novo Mexicana. The references to these two forms are inextricably confused. Engelmann refers to this grape which he says he found growing in the botanic garden of Berlin under the name of *Vitis solonis.* After careful investigation he decided that this name was a corruption of *Vitis longii*, or Long's grape, which had been brought from the headwaters of the Arkansas river by Major Long's expedition into that then unknown country in the early part of the last century. Many botanists consider this a hybrid of two or more other species, Riparia, Rupestris, Candicans and Cordifolia being offered as probable parents.

Its habitat is northern Texas "westward into New Mexico, eastward into Oklahoma and northward into Kansas and southeastern Colorado."

Vitis longii was first described by Prince in 1830. The fruit is small and sour and it appears to be of no horticultural promise.

VITIS LONGII MICROSPERMA Bailey.

1. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. V. NOVO MEXICANA VAR.; *Munson's Riparia.* 2. Munson, *Rev. Vit.*, 3:160. —. V. SOLONIS, var. MICROSPERMA (cited by 3). 3. Bailey, *Gray's Syn. Fl.*, 1:423. 1897. V. LONGII, var. MICROSPERMA, *V. Solonis*, var. *microsperma.*

Vitis longii microsperma is a small seeded, vigorous form of *Vitis*

[1] See page 21.

longii growing on the Red River in north Texas. It is said to be more resistant to drought than the normal form.

8. VITIS CHAMPINI Planch.[1]

1. Planchon, *Journ. La Vigne amer.*, 6:22. 1882 (cited by 4). 2. Munson, *Am. Hort. Soc. Rpt.*, 1885:137. 3. Ib., *Am. Pom. Soc. Rpt.*, 1885:101. 4. Planchon, *De Candolle's Mon. Phan.*, 5:323, 327, 328. 1887. *Champin grape.* 5. Munson, *Gar. and For.*, 3:474, 475. 1890. 6. Ib., *U. S. D. A. Pom. Bul.*, 3:11. 1890. 7. Ib., *Am. Gard.*, 12:061. 1891. *Champin grape.* 8. Ib., *Bush. Cat.*, 1894:20, 22, 25. 9. Bailey, *Gray's Syn. Fl.*, 1:423. 1897. 10. Beach, *N. Y. Sta. An. Rpt.*, 17:536, 557. 1898. 11. Munson, *Tex. Sta. Bul.*, 56:232, 234, 235, 240, 268. 1900. *fig. Adobe Land grape.* 12. Viala and Ravaz, *Am. Vines*, 1903:145.

Vine rather vigorous, climbing (sometimes semi-erect). Shoots thinly pubescent, somewhat angled, generally cylindrical when mature; diaphragms thin; tendrils intermittent, strong, bifid or trifid. Leaves small to rather large, slightly reniform or broadly cordate, usually entire but frequently shortly three-lobed; petiolar sinus wide to medium; dark green, glabrous above with thin cobwebby tomentum below, becoming more or less glabrous when mature. Clusters of small or medium size; peduncle medium in length. Berries large, black, slight if any bloom, very persistent, of sweet flavor and tender pulp. Seeds closely resembling Candicans. Blooms just before Labrusca. Variable in ripening season.

Champini was named and described in 1882 by Planchon. He states that it is probably a hybrid between *Vitis candicans* and *Vitis rupestris* and that it is not distinctly defined and of a uniform character, but shows in its variable forms different combinations of the characters of these two species. There seems to be some doubt among other botanists as to the parentage of Champini and it is variously credited to Candicans, Rupestris, Monticola and Berlandieri.

This species is found growing in the limestone hills of southwestern Texas, covering about the same area as Berlandieri. According to Munson

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[1] Jules Emile Planchon, a French systematic and horticultural botanist, was born in Ganges (Herault) in 1823, and died at Montpellier in 1888. Planchon was a writer of many valuable monographs on botanical subjects and in combination with F. Sahut and J. Bazille discovered that the cause of a mysterious and serious malady which had been affecting the French vineyards for some years, was due to an insect on the roots, the phylloxera. Later, he and C. V. Riley determined that this insect was a native of America. Planchon was one of the first to suggest, and always urged, the reconstitution of French vineyards by the use of American stocks. During the later years of his life he was professor of botany in the School at Montpellier. His most noted contribution to grape literature is his monograph of the grape vine and other plants of the Ampelopsis family which appeared as the second half of the fifth volume of the continuation of De Candolle's *Prodromus Systematis Naturalis.*

it is less common in the bottoms and is not so plentiful as the latter species. Associated with it in different parts of its habitat are the four species mentioned above as possible parents.

Champini is particularly well adapted to hot dry regions and will withstand considerable lime in the soil. The species is susceptible to mildew and black-rot. It can be readily grown from cuttings and grafts well in the vineyard, though the different forms are quite variable in these respects. At one time this species was considered of great promise as a stock for Vinifera for hot, dry regions but as it has proved inferior to Berlandieri in its capacity to withstand limy soils and phylloxera, and as it is not more vigorous, it has been generally dropped. The berries are large and of pure flavor, and as the vine is vigorous, it may prove of value as a source of cultivated varieties for the Southwest but it is of little or no value to the eastern grower.

9. **VITIS RUBRA** Michx.

1. Vahl,[1] *Symb. Bot.*, 3:42. 1794. V. PALMATA. 2. Willdenow, 1:1180. 1797. V. PALMATA. 3. Muhlenberg, 1813:27. V. PALMATA. 4. Pursh, 1:170. 1814. V. PALMATA. 5. Nuttall, 1:143. 1818. V. PALMATA. 6. Rafinesque, 1830:18. V. PALMATA; *Palmate grape.* 7. Ib., 1830:18. V. VIRGINIANA; *Virginia grape.* 8. Floy-Lindley, 1833:152. V. PALMATA; *Palmated leaved.* 9. (?) Le Conte, *Proc. Phil. Acad. Nat. Sci.*, 6:274. 1853. V. PALMATA; *V. Virginiana; Bland's grape.* 10. (?) Ib., *U. S. Pat. Off. Rpt.*, 1857:231. V. PALMATA; *Palmate-leaved vine; Bland's grape; V. Virginiana.* 11. Engelmann, *Bush. Cat.*, 1883:10, 11, 12, 14, 17 V. PALMATA; *V. rubra; Red grape* of the Mississippi Valley. 12. Munson, *Am. Hort. Soc. Rpt.*, 1885:133. V. PALMATA; *V. rubra.* 13. Ib., *Am. Pom. Soc. Rpt.*, 1885:97. V. PALMATA; *Palmate-leaved grape; V. rubra.* 14. Ib., *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *V. palmata; Eggert's grape.* 15. Planchon, *De Candolle's Mon. Phan.*, 5:352. 1887. V. RIPARIA, var. PALMATA; *V. Virginiensis; V. Virginiana.* 16. Ib., *Ib.*, 5:354. 1887. *V. palmata.* 17. Sargent, *Gar. and For.*, 2:340. 1889. *fig.* V. PALMATA; *V. rubra.* 18. Munson, *Ib.*, 3:474, 475. 1890. V. PALMATA. 19. Munson, *U. S. D. A. Pom. Bul.*, 3:13. 1890. *V. palmata.* 20. Ib., *Am. Gard.*, 12:586. 1891. 21. Bailey, *Gray's Syn. Fl.*, 1:423. 1897. V. PALMATA; *V. monosperma; V. rubra; V. riparia*, var. *palmata; Red grape; Cat grape.* 22. Britton and Brown, 2:410. 1897. *fig.* V. PALMATA; *Missouri grape.* 23. Bailey, *Ev. Nat. Fr.*, 1898:105. V. PALMATA; *Red grape; Cat grape.* 24. Munson, *Tex. Sta Bul.*, 56:230, 239. 1900. *V. palmata; Cat Bird grape.* 25. Bailey, *Cyc. Am. Hort.*, 4:1952. 1902. *V. monosperma; Red grape.* 26. Viala and Ravaz, *Am. Vines*, 1903:42, 113.

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[1] Martin Vahl, a Norwegian, was born in 1749, and died in 1804. As a pupil of the great Linnaeus, Vahl became a prominent worker in botany and natural history in Denmark and was an author and writer of note on these subjects, publishing much on botany. He traveled extensively, but it does not appear that he visited North America, though he wrote three large volumes on the flora of tropical America. It is probable that he named and described *Vitis palmata* from herbarium specimens.

Vine slender, of only moderate vigor, climbing very high. Shoots smooth, angled, long-jointed, bright red; diaphragms thick to medium; tendrils intermittent, long, usually bifid. Leaves with short, broad stipules; leaf-blade broadly cordate in outline, rarely entire, frequently very deeply three or even five-lobed, lobes long, acuminate; margin with broad, shallow, serrate teeth; petiolar sinus rather broad and shallow; upper surface dull dark green, smooth; lower surface frequently somewhat pubescent on ribs and veins; petioles red. Clusters medium to large, loose, seldom compound; long peduncle. Berries small, black, without bloom, not juicy. Seeds one or two, large, plump, rounded, with very short beak, slightly notched; chalaza narrow, rather indistinct; raphe indistinct.

Vitis rubra and Vahl's *Vitis palmata* are badly confused. The species was first described by Vahl in 1794, from plants cultivated in the Jardin des Plantes in Paris and supposed to have been sent by some missionary from the Mississippi Valley. It was so named on account of its tendency to five-lobed leaves. Vahl erroneously gives its habitat as Virginia. About the same time, Michaux discovered, on the banks of the Mississippi and adjacent streams, a grape which he called *Vitis rubra*, on account of its characteristic bright red shoots. The descriptions of these two varieties were copied from time to time by other botanists, but with no additional details of any importance until Engelmann, in 1883, made the claim that they were identical. There is no question as to the identity of Michaux's Rubra, but some botanists question whether Palmata is a synonym. We have taken Michaux's name as the one to which there is no question, although Engelmann was so careful a worker that it is highly probable that he is correct in considering the two species synonymous. Munson considers the species as probably a multiple "hybrid of Cordifolia with Riparia, with possibly a trace of Cissus blood, indicated in the fruit, seed and leaf." There seems to be but little evidence to support this supposition. Planchon says it is principally on the evidence of Millardet that he admits this as a separate species and that perhaps it would be better to consider it a variety of Riparia closely allied to Vahl's Palmata.

Vitis rubra is an inhabitant of sandy, rich, moist, alluvial river bottoms in Missouri and Illinois, to Louisiana and Texas, in which region it is quite restricted and apparently not plentiful.

But little is known of the horticultural characters of *Vitis rubra*. In spite of its having been classed with Riparia, it appears to resemble

more closely *Vitis cordifolia*, having the thick diaphragms and late blooming characters of the latter species, but the seeds resemble those of Riparia. Rubra grows readily from cuttings and the roots are said to be very resistant to phylloxera. It is not sufficiently vigorous, however, to be recommended as a stock. It is sometimes cultivated as an ornamental but is of no horticultural importance beyond this.

10. VITIS CORDIFOLIA Michx.

1. (?) Linnaeus, *Sp. Pl.*, 1753:203. V. VULPINA. 2. (?) Marshall, 1785:165. V. LABRUSCA. 3. (?) Walter, 1788:242. V. VULPINA 4. (?) Willdenow, 1:1181. 1797. V. VULPINA. 5. Michaux, 2:231. 1803. 6. (?) Bartram, *Dom. Enc.*, 5:291. 1804. V. SEROTINA. 7. (?) Muhlenberg, 1813:27. V. VULPINA; *V. cordifolia; Winter grape.* 8. Pursh, 1:169. 1814. *V. incisa; V. vulpina; Winter grape; Chicken grape.* 9. Nuttall, 1:143. 1818. 10. Elliott, 2:688. 1824. 11. Rafinesque, 1830:15. *V. vulpina; Frost grape; Winter grape; Fox grape.* 12. Prince, 1830:104. *Winter grape; Chicken grape; Frost grape; V. serotina; V. incisa; V. vulpina.* 13. Torrey, *Fl. of N. Y.*, 1:147. 1843. *Winter grape; Frost grape.* 14. Le Conte, *Proc. Phil. Acad. Nat. Sci.*, 6:273. 1853. V. PULLARIA; *Chicken grape.* 15. Darlington, *Fl. Cest.*, 1853:50. *Chicken grape; Winter grape; Heart-leaved Vitis.* 16. Buckley, *U. S. Pat. Off. Rpt.*, 1861:483. *Winter grape; Fox grape.* 17. (?) Saunders, *U. S. D. A. Rpt.*, 1869:82, 85, 87. 18. Engelmann, *Mo. Ent. Rpt.*, 1872:60. *Winter grape; Frost grape; Chicken grape.* 19. Ib., *Bush. Cat.*, 1883:10, 11, 12, 14, 17. *Frost grape.* 20. Bush., *Ib.*, 1883:24. 21. Munson, *Am. Pom. Soc. Rpt.*, 1885:97, 98. 22. Ib., *Am. Hort. Soc. Rpt.*, 1885:133. *Frost grape; Sour* or *Pungent Winter grape.* 23. Planchon, *De Candolle's Mon. Phan.*, 5:323, 350. 1887. *V. vulpina*, var. *cordifolia; V. vulpina; V. Virginiana.* 24. Munson, *Gar. and For.*, 3:474. 1890. 25. Ib., *U. S. D. A. Pom. Bul.*, 3:12. 1890. 26. Britton and Brown, 2:410. 1897. *Frost grape; Chicken grape; Possum grape; Winter grape.* 27. Bailey, *Gray's Syn. Fl.*, 1:424. 1897. *True Frost grape; Chicken grape; Raccoon grape; V. pullaria; V. vulpina*, var. *cordifolia.* 28. Beach, *N. Y. Sta. An. Rpt.*, 17:557. 1898. 29. Munson, *Tex. Sta. Bul.*, 56:218, 231, 240. 1900. *Sour Winter grape; Frost grape.* 30. Viala and Ravaz, *Am. Vines*, 1903:42, 76.

Vine very vigorous, climbing. Shoots rather slender; internodes long, slightly angular, usually glabrous, sometimes slightly pubescent; diaphragms thick; tendrils intermittent, long, usually bifid. Leaves with short, broad stipules; leaf-blade medium to large, cordate, entire or sometimes indistinctly three-lobed; petiolar sinus deep, usually narrow, acute; margin with rather coarse angular teeth; point of leaf acuminate; upper surface rather light green, glossy, glabrous; glabrous or sparingly pubescent below. Clusters medium to large, loose, with long peduncle. Berries numerous and small, black, shining, little or no bloom. Seeds medium in size, rather broad, beak rather short; chalaza oval or roundish, elevated, very distinct; raphe a distinct, cord-like ridge. Fruit usually sour and astringent and frequently consisting of little besides skins and seeds. Leafing, flowering and ripening fruit very late.

Owing to the fact that Cordifolia and Riparia have been badly confused in the past, the limits of the habitat of this species are difficult

to determine. Pursh gives the northern limit as Canada, and Buckley speaks of its being found at Lake Winnipeg, but all other, and some probably better informed, authorities give the northern limit as New York or the Great Lakes. The eastern limit is the Atlantic Ocean and the southern limit the Gulf of Mexico. It extends westward, according to Engelmann, to the western limits of the wooded portion of the Mississippi Valley in the North, and, according to Munson, to the Brazos River, Texas, in the South. It is found along creeks and river banks sometimes mixed with Riparia, having about the same soil adaptations as that species. It is a very common species in the Middle States and is frequently found growing on limestone soils but, according to Viala, is not indigenous to such soils.

It might be said that this species was first described by Linnaeus in 1753 under the name Vulpina, as his description was from mixed specimens of Cordifolia and Riparia. The first description, however, of which there is no question is that of Michaux in 1803. From this time on there are many descriptions under various names and much disagreement as to the limits of the species and its relation to Riparia. Engelmann in 1872 states that Riparia is generally a smaller plant than Cordifolia and that the fruit ripens earlier and is pleasanter tasting. It was still considered by many botanists that these differences were too slight to separate the forms as different species, but in 1883, Engelmann further enumerated other differences which are given under the description of *Vitis riparia*. Since this time, the specific difference of the two forms has never been questioned.

Cordifolia makes a good stock for grafting, being vigorous and forming a good union with most of our cultivated grapes. It is seldom used for this purpose, however, on account of the difficulty of propagating it by means of cuttings. For the same reason vines of it are seldom found in cultivation. It is probably of no importance horticulturally.

VITIS CORDIFOLIA FŒTIDA Engelm.

1. Engelmann, *Am. Nat.*, 2:321. 1868. V. CORDIFOLIA, var. FŒTIDA. 2. Ib., *Mo. Ent. Rpt.*, 1872:00. 3. Bailey, *Gray's Syn. Fl.*, 1:424. 1897. V. CORDIFOLIA, var. FŒTIDA.

Apparently the first record of *Vitis cordifolia foetida* is Engelmann's mention of it in the *American Naturalist* of 1868. In 1872 he speaks as

though this is the common Mississippi Valley form, for he says: "In this valley at least the fruit has a strongly and even fetidly-aromatic taste". The variety apparently is similar to the typical Cordifolia in every respect excepting the aromatic fruit.

VITIS CORDIFOLIA SEMPERVIRENS Munson.

1. Munson, *Rev. Vit.*, 5:165. f. 53. (cited by 2). 2. Bailey, *Gray's Syn. Fl.*, 1:424. 1897. V. CORDIFOLIA, var. SEMPERVIRENS. 3. Viala and Ravaz, *Am. Vines*, 1903:78. *fig. of leaf.*

Vitis cordifolia sempervirens is a south-Florida form of Cordifolia named and first described by Munson in the *Revue Viticole*. It differs from typical Cordifolia in having leaves which are thicker, narrower, more oblong, with a long lanceolate point, completely glabrous and more or less glossy on both surfaces. These leaves remain on the vines very late in the season. This variety is said to be very resistant to an excess of lime in the soil.

VITIS CORDIFOLIA HELLERI Bailey.

1. Bailey, *Gray's Syn. Fl.*, 1:424. 1897. V. CORDIFOLIA, var. HELLERI. 2. Viala and Ravaz, *Am. Vines*, 1903:79. V. CORDIFOLIA VAR.

Vitis cordifolia helleri is first mentioned by Bailey in 1897. It differs from the ordinary forms of Cordifolia in having more circular leaves without the lanceolate point. Viala and Ravaz state that such forms are found in clay soils. Bailey refers to it as an upland south-Texas form found at altitudes of from 1600 to 2000 feet.

11. VITIS BAILEYANA Munson.

1. Munson, *U. S. D. A. Pom. Bul.*, 3:14. 1890. V. VIRGINIANA. 2. Ib., *Gar. and For.*, 3:474, 475. 1890. V. VIRGINIANA 3. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. *Possum grape.* 4. Ib., *Bush. Cat.*, 1894:20. *V. Virginiana.* 5. Britton and Brown, 2:411. 1897. *V. Virginiana.* 6. Bailey, *Gray's Syn. Fl.*, 1:424. 1897. *Possum grape.* 7. Munson, *Tex. Sta. Bul.*, 56:231, 240. 1900. *Possum grape.*

Vine climbing, but of only medium vigor (less vigorous than Cordifolia). Canes slender, with short internodes, and with very many short side shoots; shoots angular, densely whitish or rusty pubescent or woolly along the angles; mature canes round, nearly smooth; diaphragms thick; tendrils intermittent, usually trifid. Leaves with blade long, cordate, frequently smaller than Cordifolia, shortly but distinctly three-lobed (lobes mostly pointed and much spreading), bright green, but not shining, above, gray below, slightly pubescent at maturity only on veins; apex short, acuminate,

acute or blunt; teeth comparatively small and notched-like, regular, not prominently acute. Clusters large; peduncle long; pedicel slender, short, making the bunch very compact. Berries very small, black with little or no bloom, intensely acid until very ripe or frosted. Seeds small to very small, slightly notched on top; chalaza depressed, oblong-oval; raphe broad, slightly distinct. Leafing, flowering and ripening fruit very late.

This species seems to have been first described by Munson in 1890 under the name of *Vitis virginiana*. In 1893 he issued a leaflet changing the name to *Vitis baileyana*.

It is an upland species growing in the mountain valleys (800 feet and upward) of southwestern Virginia, West Virginia, western North Carolina, Tennessee, northern Georgia and the uplands of western central Georgia.

Baileyana can be propagated from cuttings only with difficulty. It is of no importance horticulturally.

12. VITIS BERLANDIERI Planch.

1. Planchon, *Compt. Rend. Acad. Sci. Paris*, 91:425. 1880. (cited by 5). 2. *Journ. La Vigne amer.*, 1880:318. (cited by 5.) 3. *Gar. Mon.*, 23:25. 1881. *V. aestivalis*, var. *monticola; V. monticola seedling; V. cordifolia coriacea.* 4. (?) Engelmann, *Bush. Cat.*, 1883:15. V. MONTICOLA. 5. Planchon, *De Candolle's Mon. Phan.*, 5:323, 341. 1887. *V. monticola.* 6. *An. Hort.*, 1889:101. 7. Munson, *U. S. D. A. Pom. Bul.*, 3:14. 1890. *V. Monticola*, Mil. 8. Ib., *Gar. and For.*, 3:474, 475. 1890. 9. Ib., *Am. Gard.*, 12:959. 1891. 10. Ib., *Bush. Cat.*, 1894:20, 22, 29. *V. monticola*, Engelm. 11. Bailey, *Gray's Syn. Fl.*, 1:425. 1897. *Mountain grape; Spanish grape; Fall grape; Winter grape.* 12. Beach, *N. Y. Sta. An. Rpt.*, 17:536, 557. 1898. 13. Munson, *Tex. Sta. Bul.*, 56:231, 234, 235, 240, 261. 1900. *fig. Little Mountain grape.* 14. Viala and Ravaz, *Am. Vines*, 1903:42, 61.

Vine moderately vigorous, climbing; shoots more or less angled and pubescent; pubescence remaining only in patches on mature wood; canes mostly with short internodes; diaphragms thick; tendrils intermittent, long, strong, bifid or trifid. Leaves with small stipules; leaf-blade rather large, broadly cordate, notched or shortly three-lobed; petiolar sinus rather open, V- or U-shaped, margin with broad but rather shallow teeth, rather dark glossy green above, grayish pubescence below when young; becoming glabrous and even glossy except on ribs and veins, when mature. Clusters large, compact, compound, with long peduncle. Berries small, black, with thin bloom, juicy, rather tart but pleasant tasting when thoroughly ripe. Seeds few, medium to small, short, plump, oval or roundish with short beak; chalaza oval or roundish, distinct; raphe narrow, slightly distinct to indistinct. Leafing, flowering and ripening fruit very late.

This species was described under the name *Vitis berlandieri* by Planchon in 1880. The description was made from herbarium specimens col-

lected by the Swiss botanist, Berlandier,[1] in Texas in 1834, and also from living plants which had been shipped into France. Planchon states that this is the Monticola of Engelmann, but not the Monticola of Buckley. Buckley's description is admittedly unsatisfactory but it does not seem that Planchon is justified in saying that Engelmann was mistaken when the latter probably had better opportunities for determining Buckley's meaning than Planchon.

Berlandieri is a native of the limestone hills of southwest Texas and adjacent Mexico. According to Munson, it grows "in the same region with *V. monticola* but is less restricted locally, growing from the tops of the hills all along down and along the creek bottoms of those regions." Its great virtue is that it withstands a soil largely composed of lime. It is superior to all other American species in this respect. This and its moderate degree of vigor (not quite so vigorous as Cinerea, according to Munson) has recommended it to the French growers as a stock for their calcareous soils. The roots are strong, thick and very resistant to phylloxera.

It is propagated by cuttings with comparative ease, but its varieties are variable in this respect, some not rooting at all easily. While the fruit of this species shows a large cluster, the berries are small and sour, and Berlandieri is not regarded as having any promise for culture in America.

13. **VITIS CINEREA** Engelm.[2]

1. Engelmann, *Gray's Man.*, Edition 5, 1867:679. V. AESTIVALIS, var. CINEREA. 2. (?) Ib., *Am. Nat.*, 2:321. 1868. V. AESTIVALIS, var CANESCENS. 3. Ib., *Mo. Ent. Rpt.*, 1872:61. V. AESTIVALIS, var. CINEREA. 4. Ib., *Bush. Cat.*, 1883:10, 11, 12, 14, 16. *Downy grape* of Mississippi Valley. 5. Munson, *Am. Hort. Soc. Rpt.*, 1885:133. 6. Ib., *Am. Pom. Soc. Rpt.*, 1885:97, 98. *Ashy-leaved grape; Sweet Winter grape.* 7. Ib., *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Ashy grape; Sweet*

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[1] Jean Louis Berlandier was a Belgian pupil of the great De Candolle, but left Europe about 1828 for America and became a druggist in Matamoras, Mexico. He was one of the first botanists to explore northern Mexico and Texas. In attempting to cross one of the small streams south of the Rio Grande in 1851, he was drowned. Many of his papers, plants and some paintings are preserved in the herbarium of Harvard University and his services to botany are commemorated by the genus Berlandiera, dedicated to him by De Candolle, and the species *Vitis berlandieri* here described.

[2] George Engelmann was born at Frankfurt-on-the-Main in 1809. He was educated at the Universities of Heidelberg, Berlin and Wurzburg, receiving a doctor's degree in medicine from the latter institution. In 1832 Dr. Engelmann sailed for America and spent some months in exploring

Winter grape. 8. Planchon, *De Candolle's Mon. Phan.*, 5:323, 343. 1887. 9. Munson, *U. S. D. A. Pom. Bul.*, 3:14. 1800. 10. Ib., *Gar. and For.*, 3:474, 475. 1890. 11. Britton and Brown, 2:409. 1897. *V. aestivalis*, var. *canescens; V. aestivalis*, var. *cinerea; Downy grape.* 12. Bailey *Gray's Syn. Fl.*, 1:425. 1897. *Sweet Winter grape.* 13. Beach, *N. Y. Sta. An. Rpt.*, 17:536, 557. 1898. 14. Munson *Tex. Sta. Bul.*, 56:218, 231, 240 1900. *Sweet Winter grape; Ashy grape.* 15. Viala and Ravaz, *Am. Vines*, 1903:42, 80.

Vine vigorous, climbing; shoots more or less angled, covered with grayish pubescence which persists into winter; diaphragms thick to very thick; internodes medium to long; tendrils intermittent, long and strong, bifid. Leaves large, cordate, seldom lobed but frequently notched; frequently resembling a linden leaf; petiolar sinus medium in depth and width, rounded; margin shallowly but sharply toothed; upper surface cobwebby when young, becoming glabrous and dull when mature; lower surface and petiole covered with grayish cobwebby pubescence. Cluster large, rather loose; peduncle long; pedicel slender. Berries small, black, with little if any bloom. Seeds small, plump, short beak; chalaza round or oval, distinct; raphe ridge-like, distinct to slightly distinct. Ripening very late, becoming sweet after frost.

Cinerea is very closely allied to Aestivalis and was for a long time considered a part of that species. In 1867 Engelmann described it under the name *Vitis aestivalis*, var. *cinerea*, but in 1883 he made it a species and it has been generally regarded by botanists that the points of difference between the two forms are such that the Cinerea deserves specific recognition.

Its habitat is New York, west to Nebraska and Kansas with about 40 degrees as a northern limit, southward to the Gulf. Cinerea grows along streams mostly in limy soils, and is seldom found in very dry land. It covers about the same range as Cordifolia excepting that it grows nearer the Gulf and extends across the Rio Grande into Mexico.

The species is very late in blooming, later even than Cordifolia. It can be propagated from cuttings only with difficulty. It is probably of no importance horticulturally unless it be for wet lands.

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the forests of the Mississippi Valley studying the plants of the region, having become deeply absorbed in botany. He soon after began the practice of medicine in St. Louis where he spent the remainder of his life, dying in 1884. Engelmann was one of the most patient and devoted students of natural history of his time. He mastered several difficult genera of plants, doing his work so well that his monographs will long remain, not only authorities on the plants described, but models for the systematic botanist. Among the genera to which he devoted his time was Vitis, upon which he published several monographs. These appeared in various publications, particularly the *Proceedings of the Academy of Science of St. Louis* in 1860, the *American Naturalist* for 1868, Riley's reports as entomologist of Missouri for 1872 and 1874, and the third and all later editions of the *Bushberg Catalogue.*

VITIS CINEREA FLORIDANA Munson.

1. Munson, *U. S. D. A. Pom. Bul.*, 3:14. 1890. V. CINEREA, var. FLORIDANA. 2. Munson, *Gar. and For.*, 3:474. 1890. V. CINEREA, var. FLORIDANA. 3. Bailey, *Gray's Syn. Fl.*, 1:425. 1897. V. CINEREA, var. FLORIDANA.

Vitis cinerea floridana was named by Munson in 1890. It differs from the regular form of Cinerea in having the growing tips and sometimes the veins on the under side of the leaves more or less covered with rusty tomentum. The cluster is also longer-peduncled and more compound. It is found in Florida and Arkansas.

VITIS CINEREA CANESCENS Bailey.

1. Engelmann, *Am. Nat.*, 2:321. 1868. V. AESTIVALIS, var. CANESCENS. 2. Bailey, *Gray's Syn. Fl.*, 1:425. 1897. V. CINEREA, var. CANESCENS.

Vitis cinerea canescens was first mentioned by Engelmann in 1868 under the name *Vitis aestivalis*, var. *canescens*. He does not describe it further than to say that it approaches Cordifolia. Bailey's determination of its position was made from Engelmann's herbarium specimens. He says: "A form with rounded or heart-like leaves, the upper half of the leaf lacking the triangular and 3-lobed shape of the type." This variety has been found in Missouri, Illinois and Texas.

14. VITIS ARIZONICA Engelm.

1. Engelmann, *Am. Nat.*, 2:321. 1868. 2. Parry, *U. S. D. A. Rpt.*, 1870:416. V. ARIZONENSIS. 3. Engelmann, *Mo. Ent. Rpt.*, 1872:62. 4. Ib., *Bush. Cat.*, 1883:10, 12, 14, 16. *Arizona grape.* 5. Munson, *Am. Hort. Soc. Rpt.*, 1885:132. *Arizona grape.* 6. Ib., *Am. Pom. Soc. Rpt.*, 1885:97. *Arizona grape.* 7. Planchon, *De Candolle's Mon. Phan.*, 5:323, 342. 1887. *V. Californica; V. Arizonensis; V. riparia.* 8. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Arizona grape.* 9. Ib., *Gar. and For.*, 3:474. 1890. 10. Ib., *U. S. D. A. Pom. Bul.*, 3:10. 1890. 11. Ib., *Am. Gard.*, 12:660. 1891. *Canyon grape.* 12. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. *Gulch grape.* 13. Munson, *Bush. Cat.*, 1894:20. *Canon grape.* 14. Husmann, 1895:1, 189. 15. Bailey, *Gray's Syn. Fl.*, 1:425. 1897. *Canon grape.* 16. Beach, *N. Y. Sta. An. Rpt.*, 17:536, 557. 1898. 17. Munson, *Tex. Sta. Bul.*, 56:230, 239. 1900. *Downy Canyon grape.* 18. Viala and Ravaz, *Am. Vines*, 1903:102.

Vine weak in growth, shrubby or climbing moderately, numerous angular branchlets; diaphragms thick. Leaves mostly small, cordate, with rather open rounded petiolar sinus, entire or indistinctly three-lobed (sometimes distinctly lobed on young plants), coarsely and regularly toothed; thick, rigid, slightly rugose above, when young, white-woolly below, becoming nearly glabrous with age. Clusters small, compound:

peduncle slender, of medium length. Berries black, small to medium in size; pleasant in taste. Seeds two to three of medium size; chalaza oval in shape, slightly distinct; raphe flat, usually inconspicuous, rarely prominent.

Arizonica was named and first described by Engelmann in 1868. It was later described by Parry, botanist of the Department of Agriculture, from specimens sent to him by Dr. Charles Smart, an army surgeon stationed in southern Arizona, in 1867. Parry says that Engelmann considered it a distinct species and had provisionally named it *Vitis arizonensis*. As to the name, this is evidently an error in quoting Engelmann.

Its habitat is "Western Texas, New Mexico, Arizona, Chihuahua (Mexico), and South Utah."

This grape is adapted only to the arid districts of the West. When raised in humid climates it is subject to the attacks of mildew and black-rot. As might be expected from its habitat, it endures intense drouths. It grows well on limestone, pebbly, or alluvial soils. It has a considerable degree of resistance to phylloxera, grows readily from cuttings, and according to Munson, can withstand zero temperature without injury. As the European grapes can be raised in its native country, it is not there regarded as valuable, although the fruit is said to be rich in sugar and to be of pure flavor. It has been used in California as a stock, but is not regarded in any section very favorably and its use has never become extensive probably owing to its lack of vigor. It suckers less than Rupestris. Arizonica blossoms about the time of Labrusca. It is of no value to the grape-growers of the East and probably of none to those of the West.

VITIS ARIZONICA GLABRA Munson.

1. Munson, *Gar. and For.*, 3:474. 1890. V. ARIZONICA, var. GLABRA. 2. Ib., *U. S. D. A. Pom. Bul.*, 3:10. 1890. V. ARIZONICA, var. GLABRA. 3. Ib., *Am. Gard.*, 12:660. 1891. V. ARIZONICA, var. GLABRA. 4. Ib., *Bush. Cat.*, 1894:20. V. ARIZONICA, var. GLABRA. 5. Bailey, *Gray's Syn. Fl.*, 1:426. 1897. V. ARIZONICA, var. GLABRA.

Vitis arizonica glabra was named by Munson in 1890. It differs from the regular form in having glossy, glabrous leaves which are mostly larger and thinner. The variety is found in the region from Albuquerque, New Mexico to Truxton, Arizona, and northward into southern Utah.

15. VITIS CALIFORNICA Benth.[1]

1. Bentham, *Bot. Sulph. Voy.*, 1844:10. 2. Buckley, *U. S. Pat. Off. Rpt.*, 1861:479, 483. *California grape.* 3. Engelmann, *Mo. Ent. Rpt.*, 1872:62. 4. Ib., *Bush. Cat.*, 1883:10, 11, 12, 14, 15. *California grape.* 5. Munson, *Am. Hort. Soc. Rpt.*, 1885:137. 6. Planchon, *De Candolle's Mon. Phan.*, 5:323, 339. 1887. 7. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *California grape.* 8. Hammond, *Gar. and For.*, 2:39. 1889. *Wild grape.* 9. Munson, *U. S. D. A. Pom. Bul.*, 3:10. 1890. 10. Ib., *Gar. and For.*, 3:474, 475. 1890. 11. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. 12. Husmann, 1895:4, 189. 13. Bailey, *Gray's Syn. Fl.*, 1:426. 1897. 14. Munson, *Tex. Sta. Bul.*, 56:230, 239. 1900. *North California grape.* 15. Viala and Ravaz, *Am. Vines*, 1903:42, 50.

Vine vigorous, climbing, but shrubby if left without support; shoots cylindrical or slightly angled; diaphragms of medium thickness to rather thin; tendrils intermittent, bifid or trifid. Leaves with stipules medium to small; leaf broadly cordate; petiolar sinus variable, usually wide and open, usually entire, sometimes slightly tri-lobed; teeth variable in size, blunt; smooth above and varying below from glabrous to much whitish pubescence. Clusters small to medium, usually compact; peduncle mostly long and slender. Berries small, black with rather abundant bloom. Seeds small to medium, plump, slightly notched, if at all; chalaza oblong-oval; raphe slightly distinct or invisible.

Californica was named and described by Bentham in 1844. It was later mentioned by Newberry, Torrey and others. As these descriptions were all made either from herbarium specimens or by botanists traveling through the region, they are not so definite as those made later.

The habitat of Californica is the northern half of California along streams west of the Sierra Nevada mountains and north into Rogue River Valley in southern Oregon, its northern limit.

This species is interesting in that it is a native of a region of North America not originally infested with phylloxera, but in which phylloxera has since been introduced. As might be suspected, it has little more resistance to this insect than Vinifera and less than any other American

[1] George Bentham was born near Plymouth, England, in 1800. His father was a man of considerable wealth and the son was privately educated. Early in life he showed an inclination toward botany, writing a book on *The Plants of the Pyrences and Lower Languedoc* which was published when he was only twenty-six years old. For a time he studied law in which he showed considerable talent and where his original views attracted some attention. Later, however, he gave his attention to botany almost exclusively, joined the London Horticultural Society and the Linnaean Society, and was more or less closely connected with the workers at Kew. In connection with J. D. Hooker he wrote the *Genera Plantarum*. Others of his well-known works are *Flora Australiensis* and *Handbook of the British Flora*. Bentham died in 1884.

species. The roots are thick and fleshy, resembling Vinifera. The fruit, while pleasant, is too small to be of cultural value. It is too tender for planting in the open ground where the thermometer drops much below freezing. California growers state that it does not flourish in dry shallow soils. It is very susceptible to attacks of mildew, to which it usually succumbs when planted east of the Rocky Mountains. Californica grows readily from cuttings. It is sometimes used in its native country as an ornamental on account of its highly colored autumn foliage but is otherwise of no value.

16. VITIS GIRDIANA Munson.

1. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *California grape.* 2. Ib., *U. S. D. A. Pom. Bul.*, 3:10. 1890. 3. Ib., *Gar. and For.*, 3:474. 1890. 4. Ib., *Am. Gard.*, 12:660. 1891. *Valley grape.* 5. Bailey, *Gray's Syn. Fl.*, 1:426. 1897. *Valley grape.* 6. Munson, *Tex. Sta. Bul.*, 56:239, 239. 1900. *South California grape.* 7. Viala and Ravaz, *Am. Vines*, 1903:50. V. CALIFORNICA, var. GIRDIANA.

Vine vigorous, climbing; shoots scarcely angled, more or less covered with grayish pubescence; diaphragms medium to thick; tendrils intermittent, bifid or trifid. Leaves with medium to small stipules; blade broadly cordate, rather thin, entire or obscurely three-lobed (sometimes distinctly three-lobed on young shoots); petiolar sinus usually narrow, rather deep; margin with many small and acute teeth; under surface covered with thick grayish persistent pubescence. Cluster medium to large, compound, rather loose; peduncle of medium length, slender. Berries small, black, with thin bloom; skin thin but tough; medium to late in ripening. Sweet when ripe with a sharp pungency in the skin. Seeds similar to those of *Vitis californica*.

Girdiana was separated from *Vitis californica* by Munson in 1887. It is closely allied to, and is by many botanists still considered a variety of Californica. Wild hybrids with *Vitis vinifera* are frequently found in regions where it is indigenous.

Girdiana inhabits southern California in the region west and north of Yuma and the valleys of southern California southward into Mexico. Its northern limit is approximately the Mojave desert. The individuals of the species are very numerous, covering shrubs and trees in the regions where it grows.

The species is very suspectible to mildew and black-rot, and like Californica is not resistant to phylloxera. Girdiana is more sensitive to cold than Vinifera. Analyses show that the fruit of the species is deficient in sugar and acid. Girdiana is but little known but certainly is of no value

to the grape-growers of the East or North and probably of none to those of the Southwest.

17. **VITIS DOANIANA** Munson.

1. *Am. Hort.*, 1889:101. 2. Munson, *U. S. D. A. Pom. Bul.*, 3:9. 1890. 3. Ib., *Gar. and For.*, 3:474. 1890. 4. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. *Doan's grape.* 5. Ib., *Bush. Cat.*, 1894:20, 22, 24. *Doan's grape.* 6. Sears, *Gar. and For.*, 9:454. 1896. 7. Bailey, *Gray's Syn. Fl.*, 1:427. 1897. 8. Beach, *N. Y. Sta. An. Rpt.*, 17:530, 557. 1898. 9. Munson, *Tex. Sta. Bul.*, 56:232, 234, 235, 240, 268. 1900. *fig. Texas Panhandle Large Grape.* 10. Viala and Ravaz, *Am. Vines*, 1903:154.

Vine vigorous, climbing or shrubby if left without support; wood on mature canes cylindrical or slightly angled; diaphragm thin; tendrils intermittent, bifid, rather weak. Leaves medium in size, broadly cordate, notched or lobed and with a triangular apex; petiolar sinus medium in depth, usually narrow; margins with rather large, notched-like teeth; upper surface of a peculiar bluish-green, frequently somewhat rugose with more or less tomentum; lower surface usually with a dense whitish pubescence which shows also on shoots. Cluster medium to small. Berries variable in size, average medium, black with a thick bloom. Seeds somewhat resembling Labrusca but with shorter beak and more distinct chalaza; has characteristic groove extending from chalaza to beak.

Doaniana is quite variable, some specimens being nearly glabrous at maturity while others are densely covered with white pubescence. Munson has separated the species into two forms which he calls the early Doaniana and the late Doaniana. The species was described and named by Munson in 1890.

It is found chiefly in northwest Texas but it ranges from Oklahoma to beyond the Pecos River in New Mexico. It is considered by Bailey and Viala to be a probable hybrid with *Vitis candicans* as one of the parents. Doaniana is exceedingly hardy, withstanding great cold as well as great heat. It apparently prefers rather light soils as it is indigenous to sand-banks along rivers and the beds of sandy ravines.

Munson states that in cultivation it does well in any but very limy soils. The fruit is of comparatively good quality but the skin possesses some of the pungency of Candicans. The berries are quite persistent, hanging to the pedicel some time after ripe. The vines are not productive. The character of the must is apparently unknown. The roots are hard, penetrate deeply into the soil, and are resistant to phylloxera though somewhat variable in this respect. Doaniana grows readily from

cuttings and grafts well in the vineyard. The species blossoms with or just before Labrusca. It is of doubtful value to the southern grape-growers and is of no value in the North.

18. VITIS AESTIVALIS Michx.

1. (?) Marshall, 1785:165. V. VINIFERA AMERICANA; *American grape vine.* 2. (?) Walter, 1788:242. V. LABRUSCA. 3. Michaux, 2:230. 1803. 4. Bartram, *Dom. Enc.*, 5:289. 1804. V. SYLVESTRIS; V. *occidentalis; Common Blue grape; Bunch grape.* 5. Muhlenberg, 1813:27. V. INTERMEDIA; V. *aestivalis; Summer grape.* 6. Pursh, 1:169. 1814. V. *vulpina; V. labrusca; Summer grape.* 7. Nuttall, 1:143. 1818. 8. Elliott, 2:688. 1824. 9. Torrey, *Fl. of N. & M. Sta.*, 1826:121. 10. Rafinesque, 1830:9. V. BRACTEATA; V. *labrusca; V. aestivalis; Sour grape.* 11. Prince, 1830:199. V. *intermedia; V. sylvestris; V. occidentalis; Summer grape; Little grape; Bunch grape; Blue grape.* 12. Torrey, *Fl. of N. Y.*, 1:146. 1843. V. *intermedia; Summer grape.* 13. Darlington, 1853:50. *Little grape; Summer grape.* 14. Le Conte, *Phil. Acad. Nat. Sci.*, 6:272. 1853. V. ARANEOSUS. 15. Ib., *Ib.*, 6:271. 1853. V. BRACTEATA; V. *aestivalis; Duck-sho. grape; Swamp grape.* 16. Buckley, *U. S. Pat. Off. Rpt.*, 1861:481, 482. *Frost grape; Chicken grapet* 17. Stayman, *Gar. Mon.*, 11:37, 38, 40. 1869. *Summer grape.* 18. *Grape Cult.*, 1:4, 7, 113. 1869. 19. Engelmann, *Mo. Ent. Rpt.*, 1872:61. *Summer grape.* 20. Engelmann, *Bush. Cat.*, 1883:10, 11, 12, 14, 16. *Summer grape.* 21. Bush, *Ib.*, 1883:22. 22. Munson, *Am. Hort. Soc. Rpt.*, 1885:134. *Summer grape.* 23. Ib., *Am. Pom. Soc. Rpt.*, 1885:97, 98. *Summer grape.* 24. Planchon, *De Candolle's Mon. Phan.*, 5:323, 334. 1887. *Summer grape; Chicken grape; Little grape.* 25. Munson, *Gar. and For.*, 3:474. 1890. 26. Ib., *U. S. D. A. Pom. Bul.*, 3:11. 1890. 27. Ib., *Bush. Cat.*, 1894:20, 22, 27, 28. *Summer grape.* 28 Bailey, *Gray's Syn. Fl.*, 1:427. 1897. *Summer grape; Bunch grape; Pigeon grape; V. sylvestris; V. occidentalis; V. Americana; V. Nortoni; V. labrusca*, var. *aestivalis; V. bracteata; V. araneosus.* 29. Britton and Brown, 2:409. 1897. *Summer grape; Small grape.* 30. Munson, *Tex. Sta. Bul.*, 56:231, 234, 266. 1900. 31. Viala and Ravaz, *Am. Vines*, 1903:42, 59.

Vine very vigorous; shoots slightly pubescent or smooth when young; diaphragms medium to rather thick; tendrils intermittent, usually bifid. Leaves with short, broad stipules; leaf-blade medium to very large, rather thin when young but becoming rather thick; petiolar sinus deep, usually narrow, frequently overlapping; margin rarely entire, usually three- to five-lobed; teeth dentate, shallow, medium wide; upper surface rather dark green; lower surface with more or less reddish or rusty pubescence which, in mature leaves, usually shows in patches on the ribs and veins; petioles frequently pubescent. Clusters medium to large, usually long, not much branched, with long peduncle. Berries small to medium, with moderate amount of bloom, usually somewhat astringent. Seeds two to three, of medium size to above, plump, usually smooth, not notched; chalaza oval, distinct; raphe a distinct cord-like ridge. Leafing and ripening fruit late to very late. (See Plate.)

Vitis aestivalis is variable, particularly in its leaf characters, such as quantity of pubescence, size, shape and thickness of leaf. Those who are most familiar with it are of the opinion that in a general way the leaves

SHOOT OF *VITIS AESTIVALIS*

increase in thickness southward and that the pubescence diminishes in quantity and becomes stiffer on dry, poor soils.

Aestivalis was probably described by some of the botanists before Michaux's day but, if so, none of the descriptions is sufficiently definite and comprehensive to be recognized with certainty. Michaux was the first to describe it under the name of Aestivalis. It seems to have been generally known, as Bartram described it a short time later under the name of *Vitis sylvestris* with *Vitis occidentalis* as a synonym. He says: "This is the most common grape." Owing to the great variation in the different forms of the species as it was then understood, many of the later botanists gave descriptions of it which did not agree. This uncertainty and the difficulty of giving a description which would fit all of the forms has been relieved in a measure; first, by the new species which have been created, such as Bicolor, Monticola and Cinerea, from what would have once been regarded as Aestivalis; and second, by the description and general acceptance of well-known varietal forms, such as Lincecumii and Bourquiniana.

The division of the original species has also reduced the habitat materially, confining it to the southeastern portion of the United States from southern New York to Florida and westward to the Mississippi River. Aestivalis grows in thickets and openings in the woods and shows no such fondness for streams as Riparia or for thick timber as Labrusca, but is generally confined to uplands. Under favorable circumstances the vines grow to be very large.

Aestivalis is preeminently a wine grape. The fruit usually has a tart, acrid taste, due to the presence of a high percentage of acid, but there is also a large amount of sugar, the scale showing that juice from this species has a much higher percentage of sugar than the sweeter tasting Labruscas. The wine made from varieties of Aestivalis is very rich in coloring matter, and is used by some European vintners to mix with the must of European sorts in order to give the combined product a higher color. The berries are destitute of pulp, have a comparatively thin, tough skin, and a peculiar spicy flavor. The berries hang to the bunch after becoming ripe much better than do those of Labrusca.

The species thrives in a lighter and shallower soil than Labrusca and

appears to endure drouth better, although not equaling in this respect either Riparia or Rupestris. A southern or southeastern exposure gives better results for Aestivalis or Aestivalis hybrid vines than a northern one. The French growers report that Aestivalis is very liable to chlorosis on soils which contain much lime. The leaves are never injured by the sun, and they resist the attacks of insects, such as leaf-hoppers, better than any other American species under cultivation. Aestivalis is rarely injured by rot or mildew, according to American experience, but French growers speak of its being susceptible to both.

The hard roots of Aestivalis enable it to resist phylloxera, and varieties with any great amount of the blood of this species are seldom seriously injured by this insect. An objection to Aestivalis, from a horticultural standpoint, is that it does not root well from cuttings. Many authorities speak of it as not rooting at all from cuttings, but this is an overstatement of the facts, as many of the wild and cultivated varieties are occasionally propagated in this manner, and some southern nurseries, located in particularly favorable situations, make a practice of propagating it by this method. It is doubtful, however, if it could be successfully propagated from cuttings in New York. Varieties of this species bear grafting well, especially in the vineyard. Aestivalis blooms just after Labrusca. As might be inferred from its habitat, most cultivated varieties of this species require a longer season to mature their fruit than that of New York. On this account it is probable that Bicolor, once known as a northern form of Aestivalis, is more promising horticulturally for the North than the true Aestivalis of the Southeast.

VITIS AESTIVALIS LINCECUMII[1] Munson.

1. (?) Rafinesque, 1830:9. V. MULTILOBA; *Dissected vine.* 2. (?) Prince, 1830:183. V. DIVERSIFOLIA. 3. *U. S. Pat. Off. Rpt.*, 1847:199. POST OAK GRAPE. 4. Buckley, *Ib.*, 1861:485. V. LINSECOMII; *Post-oak grape; Pine-wood grape.* 5. Ib., *Proc. Phil. Acad. Nat. Sci.*, 1861:450. V. LINSECOMII. 6. Engelmann, *Mo. Ent. Rpt.*, 1874:74. 7. Ib., *Bush. Cat.*, 1883:16, 23. *Post-*

[1] This name has been spelled "Lincecumii" and "Linsecomii." Buckley tells us (*U. S. Pat. Off. Rpt.*, 1861:486) that this grape was named in honor of "Dr. Gideon Linsecom" of Long Point, Washington County, Texas. Engelmann changed the spelling to Lincecum without giving any reason for the change. Munson states that a daughter of Dr. Lincecum says that her father always spelled his name Lincecum. It is inconceivable that Buckley did not know how to spell his friend's name. There is other corroborative evidence that Buckley was either a poor penman, or did not read proof,

oak grape. 8. Munson, *Am. Hort. Soc. Rpt.*, 1885:135. V. LINCECUMII; *Post-oak.* 9. Planchon, *De Candolle's Mon. Phan.* 5:323, 338. 1887. V. LINCECUMII; *Post-oak grape; Vine Wood grape; V. aestivalis*, var. *Lincecumii; V. incisifolia; V. multiloba?* 10. Munson, *U. S. D. A. Pom. Bul.*, 3:12. 1890. V. LINCECUMII. 11. Ib., *Gar. and For.*, 3:474. 1890. V. LINCECUMII. 12. Ib., *Am. Gard.*, 12:585. 1891. V. LINCECUMII; *Post-oak grape.* 13. Ib., *Mich. Hort. Soc. Rpt.*, 1893:115. V. LINCECUMII; *Post Oak grape.* 14. McCluer, *Ill. Sta. Bul.*, 28:257. 1893. V. LINCECUMII; *Postoak grape.* 15. Munson, *Bush. Cat.*, 1894:20, 22, 27. *fig.* V. LINCECUMII; *Texas Post-oak grape.* 16. Husmann, 1895:110. V. LINCECUMII; *Summer grape; Post Oak grape.* 17. Munson, *Rural N. Y.*, 56:910. 1897. V. LINCECUMII; *Post-oak grape.* 18. *Mo. Sta. Bul.*, 46:62. 1899. V. LINCECUMII; *Texas Post Oak grape.* 19. Munson, *Tex. Sta. Bul.*, 56:218, 231, 234, 235, 240, 261, 264. 1900. *fig.* V. LINCECUMII; *Post-oak grape.* 20. Bailey, *Cyc. Am. Hort.*, 4:1954. 1902. *V. diversifolia; Post-oak; Pine-wood; Turkey grape.* 21. Viala and Ravaz, *Am. Vines*, 1903:42, 57. V. LINCECUMII; *Post Oak.*

Vine vigorous, sometimes climbing high upon trees, sometimes forming a bushy clump from two to six feet high; canes cylindrical, much rusty wool on shoots; tendrils intermittent. Leaves very large, almost as wide as long; entire or three-, five-, or rarely seven-lobed; lobes frequently divided; sinuses, including petiolar sinus, deep; smooth above, and with more or less rusty pubescence below. (The north-Texas, southwestern Missouri and northern Arkansas form shows little or no pubescence but has fine prickly spines at base of shoots and shows much blue bloom on shoots, canes and the under side of the leaves.) Fruit small to large, usually larger than typical Aestivalis, usually black with heavy bloom. Seeds larger than Aestivalis, pear-shaped; chalaza roundish.

Lincecumii seems to have been first described by Rafinesque, in 1830 under the name *Vitis multiloba*. His description fits fairly well, and as the source from which the vines were secured is within the habitat of the species, there appears but little doubt as to its correctness. In the same year Prince gives a very brief description of a grape from Texas under the name *Vitis diversifolia* which is probably this grape. The first description of the variety (or species) in such detail that it could not be mistaken was that of Buckley in 1861, as *Vitis linsecomii*.

It inhabits the eastern half of Texas, western Louisiana, Indian Territory, Arkansas and southern Missouri on high sandy land, frequently climbing post-oak trees, hence the name, Post-oak grape, by which it is locally known.

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or both. In his Latin description of this species nearly every other word is misspelled, and the mistakes are those of a printer rather than of one whose Latin is weak, such as "totis" for "lobis," etc. Munson says that on the different herbarium specimens of this species collected by Buckley, the name is spelled both ways but he is not able to tell which are in Buckley's hand. As the original error seems to be one by the printer or amanuensis it does not seem desirable to perpetuate it. We have consequently adopted the spelling of Engelmann and Munson.

Lincecumii has attracted considerable attention through the work of H. Jaeger and T. V. Munson in domesticating it, both of whom considered it one of the most, if not the most, promising form from which to secure cultivated varieties for the Southwest. The qualities which recommended it to them are: First, its vigor; second, its capacity to withstand rot and mildew; third, its hardiness and capacity to endure hot and dry summers without injury; and fourth, the large cluster and berry which were found on certain of the wild vines. It requires a longer season to mature than that of New York and is, consequently, of but little interest to grape-growers in this State. The fruit is characteristic because of its dense bloom, firm, yet tender texture and the peculiar so-called Post-oak flavor. The cultivated varieties have given satisfaction in many sections of the central western and southern states. Like Aestivalis, it is difficult to propagate from cuttings.

The north-Texas glaucous form of this variety mentioned in the technical description above is the *Vitis aestivalis glauca* of Bailey. This is the type of Lincecumii that Munson has used in his breeding work.

VITIS AESTIVALIS BOURQUINIANA Bailey.[1]

1. Garber, *Gar. Mon.*, 1:75. 1859. 2. Engelmann, *Bush. Cat.*, 1883:16. (Varieties of southern origin). 3. Bush, *Ib.*, 1883:23. Southern Aestivalis. 4. *Am. Hort.*, 1889:101. V. Bourquina. 5. Munson, *Gar. and For.*, 3:474, 475. 1890. V. Bourquiniana; *Southern Aestivalis.* 6. Ib., *U. S. D. A. Pom. Bul.*, 3:12. 1890. V. Bourquiniana. 7. Ib., *Am. Gard.*, 12:584. 1891. V. Bourquiniana; *Southern Aestivalis.* 8. Popenoe and Mason, *Kan. Sta. Bul.*, 44:117. 1893. V. Bourquiniana. 9. Munson, *Bush. Cat.*, 1894:20, 22, 27. V. Bourquiniana; *Southern Aesti-*

[1] Liberty Hyde Bailey was born in 1858 in South Haven, Michigan. He graduated from the Michigan Agricultural College in 1882 and then studied botany for two years with Asa Gray at Harvard University. He became professor of horticulture at his Alma Mater in 1885 and resigned in 1888 to accept the Chair of Horticulture in Cornell University, a position which he filled until 1904 when he became Director of the Cornell University Agricultural Experiment Station and Dean of the New York State College of Agriculture. In 1907 he was given the degree of Doctor of Laws by the University of Wisconsin. Dr. Bailey is known as a teacher and experimenter but is better known for his horticultural and botanical writings. He has published many popular books on agricultural subjects. The best known of these are: *The Nursery Book; The Rule Book; Principles of Vegetable Gardening; Garden Making; The Pruning Book; The Survival of the Unlike; The Evolution of Our Native Fruits.* Besides these popular, or semi-popular works he has published two cyclopedias: *The Cyclopedia of American Horticulture* and *The Cyclopedia of American Agriculture.* Dr. Bailey's position in American horticultural literature is unique in that he represents the botanical side of horticulture. He has written monographs on several of our cultivated fruits, notably grapes and plums, both appearing in *The Evolution of Our Native Fruits.*

valis. 10. Husmann, 1895:6, 8. V. BOURQUINIANA. 11. Munson, *Tex. Farm and Ranch*, Feb. 8, 1896:10. V. BOURQUINIANA; *Southern Aestivalis.* 12. Bailey, *Gray's Syn. Fl.*, 1:428. 1897. 13. Ib., *Ev. Nat. Fr.*, 1898:81, 83, 114. 14. Munson, *Am. Gard.*, 20:688. 1899. V. BOURQUINIANA. 15. Ib., *Tex. Sta. Bul.*, 56:231, 240, 261. 1900. V. BOURQUINIANA; *Southern Aestivalis.* 16. Viala and Ravaz, *Am. Vines*, 1903:178. V. BOURQUINIANA.

Bourquiniana greatly resembles Aestivalis and differs chiefly from this species in having thinner leaves and in that the shoots and under side of the leaves are only slightly reddish-brown in color and the pubescence usually disappears at maturity; this pubescence is mostly of an ashy or dun color. The leaves on some of the vines are more deeply lobed than is at all common in Aestivalis. The fruit is considerably larger than that of Aestivalis, sweeter and more juicy.

The botanical variety, Bourquiniana, is known only in cultivation. It is mentioned by Garber in 1859 and by Engelmann in 1883. Speaking of Aestivalis the latter says: "Unfortunately the typical forms cannot be propagated by cuttings and there are a number of varieties which, originating from a southern home, are not quite hardy here but on the other hand have the advantage of being readily propagated by slips in some favorable localities. * * * Unfortunately no wild plant from which these varieties might have sprung is yet known but must be looked for in the mountains and hills of the Carolinas and Georgia and only when found in a wild state can we correctly judge of their botanical status."

The name Bourquiniana was given by Munson, who ranks the group as a species. He includes therein many southern varieties the most important of which are: Herbemont, Bertrand, Cunningham, and Lenoir, these he groups in the Herbemont section; and Devereaux, Louisiana and Warren, he puts in the Devereaux section. Munson has traced the history of this interesting group and states that it was brought from southern France to America over 150 years ago by the Bourquin family of Savannah, Georgia. Many botanists have been of the opinion that Bourquiniana is a hybrid. Engelmann says: "I will only state here that a slight suspicion exists of their being hybrids between *V. aestivalis* and some form of *vinifera* though the seeds are entirely those of the former and also the resistance to phylloxera." Millardet considers Bourquiniana to be a mixed hybrid of Aestivalis, Cinerea and Vinifera. The hybrid supposition is certainly corroborated to a degree at least by the characters being more or less inter-

mediate between the parent species and also by the fact that up to date no wild form of Bourquiniana has been found.

Munson's derivation of the origin has not been accepted by either French or American botanists. In this connection Bailey says: "It is unassumable that a native grape distributed through the Mediterranean region could have escaped for centuries the critical search of European botanists and the knowledge of hundreds of generations of vignerons to be discovered at last transplanted in the new world." Bush says: "This reminds us forcibly of the '*Pedro Ximenes*' (called also White Green Riesling), which was believed to have been brought to Spain from the banks of the *Moselle* by the man whose name it bears. Count Odart, a celebrated ampelograph, wittily said: 'If he (Ximenes) took any he took ALL, for no *such* vine grows now north of the Pyrenees.' Thus we also think: If Mr. Bourquin took any of the above grapes he took ALL, for no *Herbemont* or *Lenoir* can now be found native in Europe."

The only northern variety of grape of any importance that is supposed to have Bourquiniana blood is the Delaware,[1] and in this case only a fraction of Bourquiniana blood is presumably present.

Bourquiniana can be propagated from cuttings more easily than the typical Aestivalis but not so readily as Labrusca, Riparia or Vinifera. Many of the varieties of Bourquiniana show a marked susceptibility to mildew and black-rot; in fact, the whole Herbemont group is much inferior in this respect to the Norton group of Aestivalis. The roots are somewhat hard, branch rather freely and are quite resistant to phylloxera.

19. VITIS BICOLOR Le Conte.[2]

1. Le Conte, *Proc. Phil. Acad. Nat. Sci.*, 6:272. 1853. *V. aestivalis* (Darlington). 2. Ib., *U. S. Pat. Off. Rpt.*, 1857:230. *Two-colored-leaved vine.* 3. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. V. ARGENTIFOLIA; *Blue grape.* 4. *Am. Hort.*, 1889:101. 5. Munson, *Gar. and For.*, 3:174. 1890. 6. Munson, *U. S. D. A. Pom. Bul.*, 3:12. 1890. 7. Ib., *Am. Gard.*, 12:585. 1891.

[1] *Am. Gard.*, 12:584. 1891.

[2] John Eaton Le Conte was born near Shrewsbury, New Jersey, in 1784 and died at Philadelphia in 1860. In 1817 he entered the army as a topographical engineer, and in 1831 was retired with the grade of major. Le Conte early became interested in natural history and his military expeditions gave him ample opportunity for studying the flora and fauna of eastern America. He published a number of important botanical papers, one of which was *The Vines of North America* published in 1854–55. His contributions to the genus Vitis will be found under that head.

Blue grape; Northern Summer grape. 8. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. *Blue grape; Northern aestivalis.* 9. Bailey, *Gray's Syn. Fl.*, 1:428. 1897. *Blue grape; Northern Summer grape.* 10. Britton and Brown, 2:409. 1897. *Blue grape; Winter grape; V. aestivalis*, var. *bicolor.* 11. Munson, *Tex. Sta. Bul.*, 56:231, 234, 240, 266. 1900. *Blue grape.* 12. Viala and Ravaz, *Am. Vines*, 1903:42, 59.

Vine vigorous, climbing; shoots cylindrical or slightly angled, with rather long internodes, generally perfectly glabrous, usually showing much blue bloom, sometimes spiny at base; diaphragms medium to thick; tendrils intermittent, long, usually bifid. Leaves with short, broad stipules; leaf-blade medium to very large; roundish-cordate, usually three-, sometimes on older growth shallowly five-lobed, rarely entire; petiolar sinus variable in depth, usually rather narrow; margin irregularly dentate; teeth acuminate; glabrous above, usually glabrous below and showing much blue bloom which sometimes disappears late in the season; young leaves sometimes slightly pubescent; petioles very long. Cluster of medium size, compact, usually simple; peduncle long. Berries small to medium, black with much blue bloom, rather acid but pleasant tasting when ripe. Seeds small, plump, broadly oval, very short beak; chalaza oval, raised, distinct; raphe distinct, showing as a cord-like ridge.

Bicolor is readily distinguished from Aestivalis by the absence of the reddish pubescence, and by the bloom on the under side of the leaves and is distinguished from the glaucous form of Lincecumii by the smaller fruit and seeds. The species blooms slightly later than Aestivalis and Lincecumii. It was named and described by Le Conte in 1853 and has been generally recognized as a distinct species by later botanists.

The habitat of Bicolor is to the north of that of Aestivalis, occupying the northeastern, whereas Aestivalis occupies the southeastern quarter of the United States. Like Aestivalis it is not confined to streams and river-banks but frequently grows on higher land also. It is found in north Missouri, Illinois, southwestern Wisconsin, Indiana, southern Michigan, Ohio, Kentucky, Pennsylvania, New York, southwestern Ontario, New Jersey and Maryland, and is by some botanists reported as far south as western North Carolina and west Tennessee.

The horticultural characters of Bicolor are much the same as those of Aestivalis. About the only points of difference are that it is much hardier (some of the Wisconsin vines stand a temperature as low as 20 degrees below zero); it is said to be slightly less resistant to mildew and more resistant to phylloxera. Like Aestivalis, Bicolor does not thrive on limy soils

and it is difficult to propagate from cuttings. The horticultural possibilities of Bicolor are probably much the same as those of Aestivalis, though many believe it to be more promising for the North. It is as yet cultivated but little. Its chief defect for domestication is the small size of the fruit.

20. VITIS CARIBÆA De Candolle.[1]

1. De Candolle, *Prodr.*, 1:634. 1824 (cited by Watson). 2. Chapman, *Fl. Sou. States*, —:71. (cited by Watson). 3. Buckley, *U. S. Pat. Off. Rpt.*, 1861:483. 4. Engelmann, *Bush. Cat.*, 1883:10, 12, 14, 15. 5. Munson, *Am. Hort. Soc. Rpt.*, 1885:136. *Caloosa.* 6. (?) Ib., *Soc Prom. Ag. Sci. Rpt.*, 1887:59. *Prof. Curtis' grape.* 7. Planchon, *De Candolle's Mon. Phan.*, 5:323, 330. 1887. 8. Munson, *U. S. D. A. Pom. Bul.*, 3:14. 1890. 9. Ib., *Gar. and For.*, 3:474. 1890. 10. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. 11. Bailey, *Gray's Syn. Fl.*, 1:428. 1897. 12. Viala and Ravaz, *Am. Vines*, 1903:42, 52.

Vine slender, climbing; shoots more or less woolly, or rarely nearly glabrous; diaphragms medium to thick; tendrils intermittent, rarely continuous, bifid or frequently trifid. Leaves cordate, usually entire when mature, frequently acuminate pointed; teeth shallow, wide, mucronate, slightly rugose above, thick whitish or rusty pubescence below; stipules small. Clusters large, long, with long, slender peduncle. Berries small to very small, purple or black with thin bloom, intensely acid until very ripe. Seeds usually but one or two to the berry, small to very small (Engelmann states that the Florida forms give larger seeds than those from the West Indies), notched; chalaza more or less circular, depressed, usually distinct; raphe a groove or slightly distinct. Very variable.

Caribæa was first described by De Candolle and later by many other botanists but the species is not yet well known owing to its habitat. Caribæa is an inhabitant of the West Indies, middle and southern Florida, Louisiana, eastern Mexico, Yucatan, and various portions of tropical America. It is said to grow largely on lowlands.

The species is of no practical interest as it does not thrive and soon dies in temperate climates. Its horticultural characters are unknown.

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[1] Augustin Pyramus De Candolle was born at Geneva, Switzerland, 1778, and died at Turin, Italy, in 1841. He came of an ancient French family which had been driven out of Provence in the middle of the sixteenth century owing to their religion. He began his scientific studies at the College of Geneva, but later removed to Paris where he attended courses of lectures on natural science under the greatest scientists of that day. His best known works are: *Historia plantarum Succulentarum; Synopsis plantarum in flora Gallica descriptarum;* and *Prodromus Systematis regni vegetabilis* (1824–), this last being only about two-thirds completed at the time of his death.

Alphonse Louis Pierre Pyrame De Candolle was born in Paris, France, in 1806. Like his father, whose life is sketched above, he became a noted botanist. His most important works have been translated into English and are as follows: *Geographical Botany*, 1855; *Origin of Cultivated Plants*, 1883; and the *Memoirs* of his father, 1862. He died in Geneva, Switzerland, in 1893.

21. VITIS CANDICANS Engelm.

1. Engelmann, *Gray's Pl. Lindh.*, 2:166. 1845. 2. *U. S. Pat. Off. Rpt.*, 1847:198. MUSTANG GRAPE. 3. Engelmann, *Gray's Pl. Wright.*, 1:32. 1852. 4. Vanzandt, *Gar. Mon.*, 1:166. 1859. MUSTANG GRAPE. 5. Affleck, *Mag. Hort.*, 26:98. 1860. MUSTANG GRAPE. 6. Buckley, *U. S. Pat. Off. Rpt.*, 1861:482. V. MUSTANGENSIS; *Mustang grape.* 7. Engelmann, *Am. Nat.*, 2:321. 1868. *Mustang grape.* 8. Koch, *Ill. Hort. Soc. Rpt.*, 1868:82. V. MUSTANGENSIS; *Mustang grape.* 9. Engelmann, *Mo. Ent. Rpt.*, 1874:76. *V. Mustangensis; Mustang grape.* 10. Ib., *Bush. Cat.*, 1883: 10, 11, 12, 14, 15. *V. Mustangensis; Mustang grape.* 11. Munson, *Am. Hort. Soc. Rpt.*, 1885: 137. *V. Mustangensis.* 12. Ib., *Am. Pom. Soc. Rpt.*, 1885:97, 98. *Mustang grape.* 13. Planchon, *De Candolle's Mon. Phan.*, 1887:323, 326. *V. Mustangensis; Mustang grape.* 14. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Mustang grape.* 15. Ib., *U. S. D. A. Pom. Bul.*, 3:10. 1890. 16. Ib., *Bush. Cat.*, 1894:20, 22, 25. *Mustang grape.* 17. Ib., *Rural N. Y.*, 56:610. 1897. MUSTANG. 18. Bailey, *Gray's Syn. Fl.*, 1:428. 1897. *Mustang grape.* 19. Munson, *Tex. Sta. Bul.*, 56:232, 234, 240, 267. 1900. *Mustang grape.* 20. Viala and Ravaz, *Am. Vines*, 1903:42, 54.

Vine very vigorous, climbing; shoots and petioles densely woolly, whitish or rusty; diaphragm thick; tendrils intermittent (according to Munson, rarely four continuous). Leaves with medium to large stipules; blade small to medium, broadly cordate to reniform ovate, frequently resembling those of a poplar, entire or in young shoots and on young vines and sprouts usually deeply from three- to five-, or even seven-lobed; teeth shallow, sinuate; petiolar sinus shallow, wide, sometimes lacking; dull, slightly rugose above, dense whitish pubescence below. Clusters small. Berries medium to large, black, purple, green, or even whitish, thin blue bloom or bloomless. Seeds usually three or four, large, short, plump, blunt, notched; chalaza oval, depressed, indistinct; raphe a broad groove.

Candicans was described and named by Engelmann in his account of certain plants sent from Texas by Lindheimer. In 1861 it was described by Buckley who seems to have been unaware of the species having been previously named.

The habitat of this grape extends from southern Oklahoma, as a northern limit, southwesterly into Mexico. The western boundary is the Pecos River. It is found on dry, alluvial, sandy or limestone bottoms or on limestone bluff lands and is said to be especially abundant along upland ravines. Candicans grows well on limestone lands enduring as much as 60 per ct. of carbonate of lime in the soil. The species blooms shortly before Labrusca and a week later than Riparia. It requires the long hot summers of its native country and will stand extreme drouth but is not hardy to cold, ten or fifteen degrees below zero killing the vine outright unless protected; and a lesser degree of cold injuring it severely. The

berries, which are large for wild vines, have thin skins under which there is a pigment which gives them, when first ripe, a fiery, pungent taste but which partly disappears with maturity. The berries are very persistent, clinging to the pedicel long after ripe. Candicans is difficult to propagate from cuttings. Its roots resist phylloxera fairly well. It makes a good stock for Vinifera vines in its native country but owing to the difficulty of propagation is seldom used for that purpose. In the early days of Texas it was much used for the making of wine but as it is deficient in sugar, and as the must retains the acrid, pungent flavor, it does not seem to be well adapted for this purpose. It is not regarded as having great promise for southern horticulture and certainly has none for the North.

VITIS CANDICANS CORIACEA Bailey.

1. Shuttleworth Mss., Herb. Boiss. 2. Chapman, *Fl. Sou. States*, —:71 (cited by Watson, Planchon and Bailey). V. CARIBEA, var. CORIACEA. 3. Engelmann, *Bush. Cat.*, 1883:15. V. CANDICANS, Florida form. 4. Munson, *Am. Hort. Soc. Rpt.*, 1885:136. V. CARIBEA; *Caloosa.* 5. Planchon, *De Candolle's Mon. Phan.*, 5:323, 345. 1887. V. CORIACEA. 6. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. V. CORIACEA; *Leather-Leaf grape.* 7. Ib., *Gar. and For.*, 3:474. 1890. V. CORIACEA. 8. Ib., *U. S. D. A. Pom. Bul.*, 3:10, 11. 1890. V. CORIACEA. 9. Ib., *Am. Gard.*, 12:661. 1891. *V. coriacea; Leather-leaf grape.* 10. Bailey, *Gray's Syn. Fl.*, 1:429. 1897. *Leather-leaf grape; Calloosa grape.* 11. Munson, *Tex. Sta. Bul.*, 56:232, 240. 1900. V. CORIACEA; *Leather-Leaf grape.* 12. Viala and Ravaz, *Am. Vines*, 1903:42, 52. V. CORIACEA.

Coriacea is a Florida variety of Candicans, differing from the Texas form in having a shorter, somewhat smaller and comparatively thicker seed; small stipules; quite variable leaves, intermediate in shape between Labrusca and Candicans; and an absence of the fiery flavor. The blossoming period is two or three weeks later than the Texas form.

This form of Candicans was named and described by Shuttleworth in a manuscript now in the Herbarium Boissier at Geneva, Switzerland. Botanists seem divided as whether to regard it as a separate species or as a botanical variety. Its habitat is central and southern Florida.

Coriacea is more tender than the regular forms of *Vitis candicans* and this alone would make it worthless to the northern cultivator even were it otherwise valuable.

22. VITIS SIMPSONI Munson.

1. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Simpson's grape.* 2. Ib., *Gar. and For.*, 3:474, 475. 1890. 3. Ib., *U. S. D. A. Pom. Bul.*, 3:12. 1890. 4. Ib., *Am. Gard.*, 12:586, 661. 1891.

5. Ib., *Mich. Hort. Soc. Rpt.*, 1893:116. *Palmetto-leaved grape.* 6. Bailey, *Gray's Syn. Fl.*, 1:429. 1897. 7. Munson, *Tex. Sta. Bul.*, 56:232, 234, 240, 267. 1900. *fig. Simpson's grape.* 8. Viala and Ravaz, *Am. Vines*, 1903:167.

Vine very vigorous, climbing; shoots cylindrical with much brownish pubescence; diaphragms very thick; tendrils intermittent. Leaves with stipules short and broad; leaf-blade rather thin, large, broadly cordate, usually considerably lobed; petiolar sinus of medium width and depth; margin coarsely toothed; upper surface slightly rugose and of a dark-green; lower surface with rusty white pubescence sometimes becoming almost a blue green; the shape of leaf and amount of pubescence vary widely. Clusters large, loose; peduncle long; pedicel thick. Berries small to medium, more tender in pulp and less astringent than *Vitis aestivalis*, black with moderate amount of bloom. Leafing, blooming, and ripening fruit late.

Vitis simpsoni was named and briefly described by Munson in 1887. In 1891 he stated that the species is a hybrid of *Vitis coriacea* (here considered a variety of *Vitis candicans*) crossed with *Vitis cinerea*. Bailey states that it is probably a hybrid of Aestivalis crossed with Coriacea. Some forms of Simpsoni are said to be very difficult to distinguish from *Vitis labrusca*.

Simpsoni prefers warm, sandy soils and is found in central and southern Florida. It roots from cuttings with great difficulty; it is tender and will not withstand cold winters. While it is very resistant to phylloxera and also to mildew and black-rot, its leaves are said to be much attacked by leaf-rollers. The blossoming period is just after Aestivalis. The berries are of good flavor and might be of some value for the country along the Gulf Coast but it is of no value for the North.

23. VITIS LABRUSCA[1] Linn.[2]

1. Linnaeus, *Sp. Pl.*, 1:203. 1753. *V. sylvestris Virginiana; V. vinifera sylvestris americana.* 2. Marshall, 1785:165. V. VULPINA; *Fox grape vine.* 3. Walter, 1788:242. V. TAURINA. 4. Michaux, 2:230. 1803. *V. taurina.* 5. Bartram, *Dom. Enc.*, 5:289. 1804. V. VULPINA; *Fox grape.* 6. Muhlenberg, 1813:27. *Fox grape.* 7. Pursh, 1:169. 1814. *V. taurina.* 8. Nuttall, 1:143. 1818. 9. Elliott, 2:689. 1824. *V. taurina.* 10. Torrey, *Fl. of N. & M. Sta.*, 1826:120.

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[1] The name Labrusca is an old one originally applied to a grape growing wild in Italy. Engelmann states that this grape is still known to the Italians by the name Brusca. It was probably applied to the American species by Linnaeus under the mistaken supposition that our northern Fox grape was the same as the wild Italian species.

[2] Carl von Linne, better known in the Latin form of Carolus Linnaeus, was born in 1707 at Rashult in the province of Småland, Sweden. His father, a minister, endeavored to educate his son to follow the same profession. In this he failed, as Linnaeus from his earliest years took no

11. Rafinesque, 1830:10. V. LATIFOLIA; *V. taurina; V. Labrusca; Fox grape.* 12. Ib., 1830:11. V. LUTEOLA; *Variable grape.* 13. Prince, 1830:180. V. LABRUSCA, var. NIGRA; *Black Fox; Purple Fox; V. taurina; V. vulpina.* 14. Ib., 1830:181. V. LABRUSCA, var. ALBA; *White Fox.* 15. Ib., 1830:182. V. LABRUSCA, var. ROSEA; *Red Fox.* 16. Torrey, *Fl. of N. Y.*, 1:146. 1843. *Fox grape.* 17. Darlington, *Fl. Cest.*, 1853:50. *Fox grape* of the Northern States, not of Va. 18. Le Conte, *Proc. Phil. Acad. Nat. Sci.*, 1853:270. *V. sylvestris; Fox grape; V. occidentalis; V. vulpina; V. latifolia; V. canina; V. luteola; V. rugosa; V. ferruginea; V. labruscoides; V. blanda; V. prolifera; V. obovata.* 19. Ib., *U. S. Pat. Off. Rpt.*, 1857:228. *Fox grape; V. sylvestris; V. occidentalis; V. vulpina; V. latifolia; V. canina; V. luteola; V. rugosa; V. ferruginea; V. labruscoides; V. prolifica; V. obovata.* 20. Buekley, *Ib.*, 1861:481. *Frost grape. Fox grape* of the Northern States. 21. Stayman, *Gar. Mon.*, 11:37, 38. 39, 40. 1869. *Northern Fox Grape.* 22. Engelmann, *Mo. Ent. Rpt.*, 1872:61. *Fox grape; Northern Fox grape.* 23. Ib., *Bush. Cat.*, 1883:9, 10, 11, 12, 13, 14, 19. *Fox grape; Northern Fox grape.* 24. Munson, *Am. Hort. Soc. Rpt.*, 1885:136. *Fox grape.* 25. Ib., *Am. Pom. Soc. Rpt.*, 1885:97, 98, 101. 26. Planchon, *De Candolle's Mon. Phan.*, 5:322, 324. 1887. *Fox grape; Northern Fox grape; V. vinifera sylvestris americana; V. latifolia; V. canina; V. luteola.* 27. Munson, *Soc. Prom. Ag. Sci. Rpt.*, 1887:59. *Fox grape.* 28. Pearson, *Gar. and For.*, 2:584. 1889. 29. Munson, *U. S. D. A. Pom. Bul.*, 3:11. 1890. 30. Ib., *Gar. and For.*, 3:474. 1890. 31. Britton and Brown, 2:408. 1897. *Northern Fox grape; Plum grape.* 32. Bailey, *Gray's Syn. Fl.*, 1:429. 1897. *Fox grape; Skunk grape; V. vulpina; V. blandi.* 33. Munson, *Tex. Sta. Bul.*, 56:232, 240. 1899. *Northern Fox grape.* 34. Viala and Ravaz, *Am. Vines*, 1903:42, 45.

Vine moderately vigorous, stocky, climbing; shoots cylindrical, densely pubescent; diaphragms medium to rather thick; tendrils continuous, strong, bifid or trifid. Leaves with long, cordate stipules, leaf-blade large, thick, broadly cordate or roundish; entire to three-lobed, frequently notched; sinuses rounded; petiolar sinus variable in depth and width, V-shaped; margin with rather shallow, acute pointed, scalloped teeth; upper surface more or less rugose, dark green. on young leaves pubescent, becoming glabrous when mature; lower surface covered with dense pubescence, more or less whitish on young leaves, becoming rusty or dun-colored when mature. Clusters small to medium, more or less compound, usually shouldered, compact; pedicels thick; peduncle short to medium. Berries medium to large; skin thick, covered with considerable bloom, strong musky or foxy aroma. Seeds two to four, large, distinctly notched, beak short; chalaza oval in shape, indistinct, showing merely as a depression; raphe, a groove. (See Plate.)

Vitis labrusca, the northern Fox grape, is mentioned in many of the early writings of this country, particularly in those describing New Eng-

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interest in the classical studies then taught. His father was finally induced to educate young Linnaeus as a physician. Linnaeus was the greatest systematist in the history of botany. His general system, though much modified, is still in use. Although he named many species of plants, it was not as a traveler and explorer but as a recipient of the results of travels of others that the specimens were secured from which the descriptions were made. Linnaeus died at Upsala, Sweden, in 1778. His herbarium after his death was sold and finally became the property of the Linnaean Society of London, where the specimens are frequently used by botanists from various parts of the world for purposes of comparison.

SHOOT OF *VITIS LABRUSCA*

land. It was probably described by other botanists before Linnaeus but if so their descriptions are so meager that it cannot be definitely recognized. Linnaeus in 1753, under *Vitis labrusca*, says: "Leaves cordate, slightly tri-lobed, dentate, downy below." Marshall in 1785 under the name *Vitis vulpina*, or Fox grape, says: "This in manner of growth hath much the appearance of the other kinds. The leaves are generally larger, and smooth, but whitish underneath. The fruit or grapes are about the size of a common cherry and have a strong scent, a little approaching to that of a Fox, whence the name of Fox-grape. There are also varieties of this, some with whitish or reddish fruit which is generally most esteemed, and others with black, of which are our largest grapes." From the time of Marshall on all of the botanists give more or less complete descriptions of this species and except for the brief misunderstanding at first as to the name, its identity has never been questioned. At one time it was supposed to grow in the Mississippi Valley but Engelmann demonstrated that what were taken for Labrusca vines in Missouri were in reality strongly pubescent forms of Aestivalis.

Labrusca is indigenous to the eastern part of North America, including the region between the Atlantic Ocean and the Alleghany Mountains. It is sometimes found in the valleys and along the western slopes of the Alleghanies. Many botanists say it is never found in the Mississippi Valley; Munson reports specimens, however, from Indiana and Tennessee. In the first-named area it ranges from Maine to Georgia. It has the most restricted habitat of any American species of horticultural importance, being much exceeded in extent of territory by *Vitis rotundifolia*, *Vitis aestivalis*, and *Vitis riparia*.

Labrusca has furnished more cultivated varieties, either pure-breeds or hybrids, than all other American species together. The reason for this is partly, no doubt, due to the fact that it is native to the portion of the United States first settled and is the most common grape in the region where agriculture first advanced to the condition where fruits were desired. This does not wholly account for its prominence, however, which must be sought elsewhere. In its wild state Labrusca is probably the most attractive to the eye of any of our American grapes on account of the size of its fruit, and this undoubtedly turned the attention of those who were

early interested in the possibilities of American grape-growing to this species rather than to any other.

The southern Labrusca is quite different from the northern form and probably demands different conditions for its successful growth; in the North at least two types of the species may be distinguished. Vines are found in the woods of New England, which resemble Concord very closely in both vine and fruit, excepting that the grapes are much smaller in size and more seedy. There is also the large-fruited, foxy Labrusca, usually with reddish berries, represented by such cultivated varieties as Northern Muscadine, Dracut Amber, Lutie and others. Labrusca is peculiar amongst American grapes in showing black-, white- and red-fruited forms of wild vines growing in the woods. Because of this variability it is impossible to give the exact climatic and soil conditions best adapted to the species. It is reasonable to suppose, however, that the ideal conditions for this or any other species are not widely different from those prevailing where the species is indigenous. In the case of Labrusca this means that it is best adapted to humid climates and that the temperature desired varies according to whether the variety comes from the southern or northern form of the species.

The root system of Labrusca does not penetrate the soil deeply,[1] but it is said to succeed better in deep and clayey soils than Aestivalis.[2] In the Southern and Middle States it does better on eastern and northeastern slopes. As would be suspected from its original marshy home, it endures an excess of water in the soil, and on the other hand requires more water for successful growing than Aestivalis or Riparia. In spite of its ability to withstand clayey soils, it seems to prefer loose, warm, well-drained sandy lands to all others. The French growers report that all varieties of this species show a marked antipathy to a limestone soil, the vines soon becoming affected with chlorosis when planted in soils of this nature. In corroboration of this Stayman reports that it is not found growing native in clayey, limestone soils. The Labruscas succeed very well in the North and fairly well in the middle West, as far south as Arkansas, where they are raised on account of their fruit qualities but here the vines are not nearly

[1] Husmann, 1895:189.

[2] *Grape Cult.*, 1:4. 1869.

SHOOT OF WYOMING

so vigorous and healthy as are those of other species. In Alabama they are reported to be generally unsatisfactory, and in Texas the vines are short-lived, unhealthy, and generally unsatisfactory, particularly in the dry regions. There are some exceptions to this, as, for instance, in the Piedmont region of the Carolinas, where, owing to elevation or other causes, the climate of a southern region is semi-northern in its character.

The fruit of Labrusca is large and usually handsomely colored. The skin is thick, covering a layer of adhering flesh, which gives the impression of its being thicker than it actually is; it is variable in tenderness, sometimes tough, but in many of our cultivated varieties it is so tender as to be a detriment in that it is inclined to crack on the vines in case of rain at ripening time, and the berries to crush in transportation. The skin of this species usually has a peculiar aroma, generally spoken of as *foxy*, and a slightly acid, astringent taste. Beneath the skin there is a layer of juicy pulp, quite sweet and never showing much acidity in ripe fruit. The center of the berry is occupied by rather dense pulp, more or less stringy, with considerable acid close to the seeds. Many people object to the foxy aroma of this species, but, nevertheless, the most popular American varieties are more or less foxy. Analyses have shown that Labrusca fruit is generally characterized by a low percentage of sugar and acid, the very sweet tasting fox grapes not showing as high a sugar content as some of the disagreeably tart Aestivalis and Riparia sorts. This, in addition to the foxiness which furnishes an excess of aroma in the wine, has prevented Labrusca varieties from becoming favorites with the wine-makers. Must from these varieties is adapted only for the making of dry wines, and when making wines of any other class it is necessary to add sugar and water, the quantities being governed by the final product desired.

In addition to the strong points already enumerated, it may be said that Labrusca submits well to vineyard culture, is fairly vigorous and generally quite productive. It grows readily from cuttings and in point of hardiness is intermediate between Riparia, the hardiest of our American species, and Aestivalis. The roots are soft and fleshy (for an American grape) and in some localities quite subject to attacks of phylloxera. None of the varieties of Labrusca have ever been popular in France on this account. In the wild vines the fruit is inclined to drop from the vine when ripe. This

defect is known as "shattering" or "shelling" among grape-growers and it is a serious weakness in certain varieties of Labrusca. It is said to be more sensitive in its wild state to mildew and rot than any other American species[1] but the evidence on this point does not seem to be wholly conclusive. In the South and in some parts of the middle West the leaves of all varieties of Labrusca sunburn and shrivel in the latter part of the summer. The vines do not endure drouth as well as Aestivalis or Riparia and not nearly so well as Rupestris. Pearson[2] reports that the Labruscas can be sprayed with copper sulphate mixtures with much less danger to the leaves than can Aestivalis.

24. VITIS VINIFERA Linn.

1. Linnaeus, *Sp. Pl.*, 1:202. 1753. 2. Speechly, 1791:1. 3. Willdenow, *Sp. Pl.*, 1:1180. 1797. 4. Bartram, *Dom. Enc.*, 5:289. 1804. 5. Rafinesque, 1830:7. *Wine Grape.* 6. Darlington, *Fl. Cest.*, 1853:49. *Wine grape; Foreign grape.* 7. Buckley, *U. S. Pat. Off. Rpt.*, 1861:480. *European grape.* 8. Stayman, *Gar. Mon.*, 11:38. 1869. *European grape.* 9. Bush, *Grape Cult.*, 1:140. 1869. *European grape.* 10. Engelmann, *Mo. Ent. Rpt.*, 1874:74. 11. Moore, *Mich. Pom. Soc. Rpt.*, 1875:36. 12. Engelmann, *Bush. Cat.*, 1883:11, 12, 13, 14, 19. 13. Munson, *Am. Hort. Soc. Rpt.*, 1885:137. 14. De Candolle, *Or. Cult. Pl.*, 1885:191. 15. Onderdonk, *U. S. D. A. Rpt.*, 1887:652. 16. Planchon, *De Candolle's Mon. Phan.*, 5:324, 355. 1887. 17. *Am. Pom. Soc. Rpt.*, 1889:107, 109. 18. Husmann, 1895:29, 187. 19. Munson, *Rural N. Y.*, 56:610. 1897. 20. Ib., *Tex. Sta. Bul.*, 56:231, 233, 240. 1900. *Asiatic Wine grape.* 21. Bailey, *Cyc. Am. Hort.*, 4:1956. 1902. *fig. of leaves. Wine grape; European grape.* 22. Viala and Ravaz, *Am. Vines*, 1903:42, 115.

Quite variable in vigor, not so high climbing as most American species. Tendrils intermittent. Leaves rounded-cordate, rather thin, rather smooth, and when young, shining, frequently more or less deeply three-, five-, or even seven-lobed; usually glabrous but in some varieties the leaves and young shoots are hairy and even downy when young; lobes rounded or pointed; teeth variable; petiolar sinus deep, narrow, usually overlapping. Fruit, of cultivated varieties at least, very variable in size and color. Berries of cultivated varieties usually oval though many varieties are globular fruited. Seeds variable in size and shape, usually notched at upper end and characterized always by bottle-necked, elongated beak; a rather broad, usually rough, slightly distinct chalaza situated rather high up on the seed; raphe indistinct. Flowers soon after Labrusca. The roots are large, soft and spongy. A very variable species.

Botanists have never agreed as to whether *Vitis vinifera* is a single species or a combination of two or more species which has been cultivated for so long that it is impossible to discover the original forms. The name,

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[1] *U. S. D. A. Rpt.*, 1862:198.

[2] *Gar. and For.*, 2:584. 1889.

SHOOT OF *VITIS VINIFERA*

Vitis vinifera, is usually credited to Linnaeus though it was used for this grape before Linnaeus' time by Bauhin and possibly by others. The description of Linnaeus accompanying the name is very short, as follows: Leaves sinuately lobed, glabrous. Many of the earlier botanists, Tournefort for one, described numerous varieties as though they were species. As a natural corollary of the uncertainty of the botanical status of *Vitis vinifera* the original habitat of the species is not positively known. De Candolle, as noted in the first part of this work, considered the region about the Caspian Sea as the probable habitat of the Old World grape. There is but little doubt that the original home of *Vitis vinifera* is some place in western Asia. There is strong corroborative evidence of this in the fact that the climatic conditions under which the species flourishes are such as are there found.

The first chapter in *The Grapes of New York* has been devoted to this, the Old World grape, and for a discussion of the horticultural characters of the species and of the efforts to cultivate it in America, the reader is referred to that chapter.

Neither American nor European writers agree as to the exact climate desired by Vinifera for the reason, probably, that all of the varieties in this variable species do not desire the same conditions. There are certain phases of climate, however, that are well agreed upon, as follows: The species requires a warm, dry climate, and is more sensitive to change of temperature than our American species. Stayman, who had had considerable experience in raising Vinifera grapes in different places, says: Vinifera "will not endure much rain or grow on wet land. It is only in a dry climate and on high rolling situations that it will succeed, where there is not more than 31 inches of an annual rainfall and for the growing and maturing season 15 inches." So far as soil alone is concerned, the French growers tell us that it can be grown successfully in a wide variety of soils, being much less particular in this respect than our American species. They state that it will withstand and grow successfully in soils so strongly impregnated with lime that any of the American sorts would succumb to chlorosis.

There are certain characters connected with the fruit of this species which are peculiar to it and are not found in any of our American sorts. First, the skin, which is attached very closely to the flesh and which is never astringent or acid, is of good flavor and can be eaten with the fruit.

Second, the flesh is firm, yet tender, and uniform throughout, differing in this respect from any of our American sorts, which frequently show a sweet, watery and tender pulp close to the skin with a tough and more or less acid core at the center. Third, the flavor is peculiarly sprightly, a quality known as *vinous*, because it characterizes this species. It may be said in this connection, however, that many Americans, accustomed to American grapes, prefer the flavor of our native sorts to the vinous flavor of the Old World grape. Europeans invariably, and Americans who live in Vinifera raising sections, usually, deem the Vinifera flavor greatly superior. Fourth, a strong adherence of the berry to the pedicel, the fruit never " shattering " or " shelling " from the cluster.

Varieties of Vinifera have been selected for the making of wine through so many centuries that this species has become the first and great wine-making grape. Whatever the future may hold in store for American grapes, there is no question but that at present the Viniferas are far superior to any native Americans for wine-making purposes, both as to quality in general and the number of kinds of wine which can be made.

The weak points of Vinifera are: First, an inability to withstand the cold of our winters. The different varieties of Vinifera undoubtedly vary considerably as to the exact amount of cold they will stand without injury. All of them tried at this Station freeze to the ground even in the mildest winters. Second, foliage particularly susceptible to the attack of mildew and fruit susceptible to the attack of black-rot. Third, they generally require a ripening season much longer than our climate affords. Fourth, the roots are soft and spongy and very liable to the attack of phylloxera, though they apparently penetrate more readily in dense clays and hard dry soils than any of our American species.

In the various hybrids that have been made between American and Vinifera varieties it is usually found that the desirable qualities of Vinifera are taken in about the same proportion as the undesirable ones. The fruit is improved in the hybrid but the vine is weakened. Quality is purchased at the expense of hardiness and disease-resisting power. Vinifera may be grown very readily from cuttings. This is of little cultural importance, however, as both in Europe and America varieties of the species are usually grafted on phylloxera-resistant stock.

CHAPTER V

THE LEADING VARIETIES OF AMERICAN GRAPES

ADIRONDAC.

(Labrusca, Vinifera?)

1. *Mag. Hort.*, 27:490. 1861. 2. *Horticulturist*, 17:94, 132, 518. 1862. *fig.* 3. *Mag. Hort.*, 28:447, 540. 1862. 4. *Am. Pom. Soc. Rpt.*, 1862:160. 5. *U. S. D. A. Rpt.*, 1863:127. 6. *Mag. Hort.*, 30:25, 62, 140, 150, 208. 1864. 7. Mead, 1867:104. 8. Fuller, 1867:216. 9. Thomas, 1867: 399. 10. *Am. Pom. Soc. Cat.*, 1867:44. 11. *Grape Cult.*, 1:115. 1869. 12. *Gar. Mon.*, 16:240. 1874. 13. *Bush. Cat.*, 1883:67. 14. *Am. Pom. Soc. Rpt.*, 1883:56. 15. *Montreal Hort. Soc. Rpt.*, 1885:82. 16. *N. Y. Sta. An. Rpt.*, 10:493. 1891.

Adirondac is an old variety now nearly or quite obsolete. It is probably a seedling of Isabella which it greatly resembles in vine and fruit characters. It is of the Labrusca type, belonging to the southern group of this species, and like most of the southern Labruscas lacks in hardiness and vigor though it surpasses its parent in the first quality. The vine makes a slow, weak growth and is particularly susceptible to fungi. The quality of the fruit is very good, juicy and vinous, with the slight foxy flavor peculiar to Isabella. Its earliness, a week or ten days earlier than Concord, is one of its chief points of merit. The Adirondac did not attain favor because of the many faults of the vine and in the time of its cultivation was seldom found except in the vineyard of the amateur. The claim is often made for this variety that it is nearer the Black Hamburg in quality than any other American grape.

Adirondac was first exhibited by J. W. Bailey of Plattsburg, New York, at the Montreal Horticultural Society Exhibition in Montreal in 1861. The original vine was found in 1852 by J. G. Witherbee in his garden a short distance from the shore of Lake Champlain in the town of Port Henry, Essex County, New York. The variety was introduced by Bailey. On account of its resemblance in vine to Isabella it is supposed by many to be a seedling of that variety. Adirondac was placed on the grape list of the American Pomological Society in 1867 and was dropped from it in 1883.

Vine variable in vigor and productiveness, injured in severe winters, subject to attacks of mildew in unfavorable seasons. Foliage dark green, thick. Flowers semi-

fertile, open in mid-season or earlier; stamens upright. Fruit variable in season of ripening, usually in edible condition about ten days before Delaware, does not always keep well. Clusters above medium to small, usually rather compact, seldom shouldered. Berries not uniform in size averaging below Concord, roundish to slightly oval on account of compactness of cluster, dark purplish-black, persistent. Skin intermediate in thickness. Flesh unusually tender and melting, sweet, mild, good to very good but with an after flavor which is not altogether agreeable. Seeds rather large, few in number. Must 82½°–83°.

ADVANCE.

(Riparia, Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, 1872:94. 2. *U. S. D. A. Rpt.*, 1875:386. 3. *N. J. Hort. Soc. Rpt.*, 1881:11. 4. *Bush. Cat.*, 1883:67, 152. 5. *Va. Sta. Bul.*, 30:108. 1893.

Advance is an unimportant variety now to be found only in the vineyards of experimenters. At the time of its introduction (1872) it was of much interest as a hybrid between Riparia, Labrusca and Vinifera, Clinton being one parent and Duke of Magenta, a grape resembling Black Hamburg, the other. In quality of fruit it is an improvement over Clinton but unfortunately, as with so many primary hybrids of our native species with *Vitis vinifera*, the vine is tender and susceptible to fungi.

This variety was produced by J. H. Ricketts of Newburgh, New York, and was first exhibited at the grape show in New York City in 1870.

Vine vigorous, productive, not very hardy, subject to attacks of mildew. Canes long, covered with considerable blue bloom. Leaves rather large, thin, dark green. Fruit ripens in mid-season, appears to keep well. Clusters above medium size, usually single-shouldered, the shoulder being connected to the cluster by a rather long stem, medium in compactness and with many abortive fruits. Berries medium to large, oval, dark purplish-black, covered with heavy blue bloom, persistent. Flesh somewhat tender, flavor sweet and spicy with considerable resemblance to that of Clinton, quality good.

AGAWAM.

(Labrusca, Vinifera.)

1. *Mag. Hort.*, 23:86. 1857. (Rogers' hybrids.) 2. *Ib.*, 27:104, 489, 533. 1861. 3. *Horticulturist*, 17:26, 510. 1862. *fig.* 4. *U. S. D. A. Rpt.*, 1863:130, 549. *fig.* 5. *Horticulturist*, 20:81. 1865. 6. *Mag. Hort.*, 31:68, 106, 333. 1865. 7. Husmann, 1866:124. 8. Fuller, 1867:230. 9. *Am. Pom. Soc. Cat.*, 1867:44. 10. *Horticulturist*, 24:126. 1869. 11. *Grape Cult.*, 1:43, 153, 181, 262, 325. 1869. 12. *Am. Jour. Hort.*, 5:263. 1869. *fig.* 13. Barry, 1872:421. 14. *Mich. Pom. Soc. Rpt.*, 1875:387. *fig.* 15. *Bush. Cat.*, 1883:69. *fig.* 16. *Gar. and For.*, 3:490. 1890. 17. *Can. Hort.*, 17:191.

AGAWAM

1894. *col. pl.* 18. *N. Y. Sta. An. Rpt.*, 15:433. 1896. 19. *Ib.*, 17:526, 548, 552, 553. 1898. 20. *W. N. Y. Hort. Soc. Rpt.*, 1899:91. 21. *Mo. Sta. Bul.*, 46:37, 43, 44, 46, 47, 55. 1899.

Randall (20).[1] ROGERS' No. 15 (2, 3, 4, 5, 6, 7, 8, 9). *Rogers' No. 15* (10, 11, 12, 13, 14, 15).

Agawam is the most largely grown of Rogers' hybrids both in the United States and in New York, the qualities commending it being large size of bunch and berry, rich, sweet, aromatic flavor, attractive appearance, excellent keeping qualities, vigor of vine, and capacity for self-fertilization. It has the distinction of being the only self-fertile variety among Rogers' named hybrids. For a grape having its proportion of European parentage the vine is vigorous, hardy and productive, though not equal to many pure-bred American sorts in these respects. In severe winters it is precariously hardy in New York. Its chief defects in fruit are a somewhat thick and tough skin, coarse solid texture of pulp, and, for the European palate, its decidedly foxy flavor. The vine is susceptible to the mildews and in many localities does not yield well. In some markets Agawam is highly esteemed and in making certain wines it is much sought for in blending because of the flavor it imparts. Although it ripens soon after Concord it can be kept much longer and really improves in flavor the first few weeks after picking. It may be kept in good condition in common storage until January. Not uncommonly it shrivels on the stem making a raisin. It seems to prefer somewhat heavy soils, doing better on clay than on sand or gravel. The Agawam is often sold in the markets as Salem which it resembles and by which it is surpassed in quality.

For an account of the parentage and origin of Agawam see "Rogers' Hybrids" of which this is No. 15. It was first mentioned as a variety about 1861. In 1869 Rogers gave the fruit the name Agawam from the Indian name of a town in Hampden County, Massachusetts. It has become one of the most, if not the most, popular of Rogers' hybrids and is in some sections raised to a considerable extent as a market sort. It is propagated and sold to-day by practically all nurserymen. It was placed on the grape list of the American Pomological Society fruit catalog in 1867 and is still retained there.

Vine vigorous, usually hardy, medium to productive, subject to mildew. Canes of average length, medium in number, rather thick, moderately dark brown; nodes

[1] Numbers in parentheses designate authors or publications cited in the list of references.

enlarged, somewhat flattened; internodes short to medium; diaphragm nearly thick; pith of average size; shoots tinged with green, glabrous; tendrils intermittent to continuous, bifid to trifid.

Leaf-buds open in mid-season, of average size, long, somewhat thick, conical to nearly obtuse. Young leaves tinged with carmine on lower side and along margin of upper side, prevailing color pale green. Leaves of average size, thick; upper surface light green, dull, moderately smooth; lower surface pale green, slightly pubescent, flocculent; leaf not lobed, terminus somewhat acute; petiolar sinus deep, narrow, often overlapping; lateral sinus very shallow when present; teeth shallow, wide. Flowers occasionally on plan of six, nearly self-fertile, open medium late; stamens upright.

Fruit ripens soon after Concord, keeps until mid-winter. Clusters variable averaging medium to large, short, rather broad, tapering to somewhat cylindrical, sometimes single-shouldered, somewhat loose; peduncle medium to short, nearly thick; pedicel of average length, usually thick, covered with few warts, much enlarged at point of attachment; brush very short, pale green. Berries nearly large, roundish to slightly oval, dark and dull purplish-red somewhat resembling Catawba, covered with lilac bloom, very persistent. Skin thick, tough, adheres slightly to the pulp, contains no pigment, somewhat astringent. Flesh pale green, translucent, tough, slightly stringy, rather solid, foxy, good in quality. Seeds somewhat adherent, two to five averaging four, large, rather narrow, long, often with slightly enlarged neck, blunt, brownish; raphe usually distinct, shows as a ridge in the bottom of a broad groove; chalaza rather large, distinctly above center, not obscure.

ALEXANDER.

(Labrusca, Vinifera?)

1. *Dom. Enc.*, 1804:291. 2. McMahon, 1806:235. 3. Johnson, 1806:164. 4. Adlum, 1823:139. 5. *Ib.*, 1823:140. 6. Dufour, 1826:5, 9, 24, 55, 116, 207, 247, 255. 7. Adlum, 1828:173. 8. Ib., 1828:174. 9. Prince, 1830:173, 216, 219. 10. Ib., 1830:174. 11. Ib., 1830:200. 12. Downing. 1845:253. 13. *U. S. Pat. Off. Rpt.*, 1847:462. 14. *Ib.*, 1847:468. 15. *Ib.*, 1856:434. 16. *Bush. Cat.*, 1883:68.

Alexander's (7, 15). *Alexandria* (15). *Black Grape* (16). *Buck Grape* (11). CAPE (6, 15). *Cape grape* (12, 13, 16). *Cape of Good Hope grape* (9, 10). CLIFTON'S CONSTANTIA (4, 8, 10). *Clifton's Constantia* (12, 16). *Columbian* (11). *Constantia* (6, 10). *Madeira of York, Pa.* (12). *Rothrock of Prince* (16). SCHUYLKILL MUSCADEL (5, 7, 13). *Schuylkill Muscadel* (9, 12, 14, 15, 16). *Schuylkill Muscadine* (12). *Spring Mill Constantia* (9, 12, 16). *Tasker's grape* (1, 2, 3, 7, 9, 12, 16). *Vevay* (13, 15, 16). WINNE (11). *Winne* (12, 16). *York Lisbon* (16).

Alexander is now a grape of the past but no other of our American varieties better deserves historical record. We have seen in the preceding chapters how important a part it had in the evolution of our native grapes, being one of the first wild grapes to be domesticated. The Alexander was

a coarse grape with so much foxiness of flavor that it did not please the early growers, who had been accustomed to European sorts, as a table-grape, but it made a very good wine of the claret type and was grown for this purpose until displaced by the Catawba. It was wine made from this variety that Thomas Jefferson[1] pronounced "worthy of the best vineyards of France." The early writers differ so in their estimates of the good and bad qualities of this grape that it is hard to give its true characters at this late date.

The early history of Alexander is really the history of two varieties: the Schuylkill Muscadel and the Clifton Constantia. The first of these varieties was, according to Bartram, found growing in the vicinity of Philadelphia on the hills bordering the Schuylkill River in the neighborhood of an old vineyard of European grapes. The finder, John Alexander, was gardener to Governor Penn of Pennsylvania, into whose garden he introduced it a few years before the American Revolution. It was later known as Tasker's grape from a Mr. Tasker of Maryland who cultivated it largely. The Clifton Constantia, according to Adlum, originated with William Clifton of Southwark, Philadelphia, who states that it was a chance seedling in his garden. Adlum says that the two varieties had been confused, that "they are much alike in the growth of the vine and the color of the grape but the Schuylkill has rather the largest berries and is sweeter, and generally has a small shoulder or branch with four or five grapes on it growing out from the top of the bunch." Prince also describes the varieties as separate, but he says "they are generally cultivated and considered as synonymous." Later writers consider the two grapes identical.

Peter Legaux, the promoter of a vineyard company at Spring Mill, about fourteen miles from Philadelphia, secured some vines of the Clifton Constantia from Clifton and later introduced it under the name of Cape grape stating that he had secured it from the Cape of Good Hope. Whether he did this purposely and with intent to defraud or whether he had accidentally mixed the cuttings secured from Clifton with some of a large number of cuttings which had come from abroad will never be known. When

[1] Adlum, John. *Cultivation of the Vine:* 149. 1828.

reproached for his deception he denied that this variety was a native and continued to assert that he had secured it from the Cape of Good Hope. In this he was strongly supported by Dufour who says: "I will also try to save the character of our Cape grapes from being merely wild grapes, because some are now found in the woods." Legaux's advertisement of this variety had the effect of making it known at least and it is the opinion of writers of that day that many were induced to try this grape under the supposition that it was from the Cape of Good Hope who would have scorned it had they supposed it to be a native. It came to be considerably planted in all parts of the United States; was early introduced into the West and preceded the Catawba as the popular grape around Cincinnati. It was found worthless in New England and New York, the season not being long enough to mature the fruit. With the introduction and dissemination of Catawba it was gradually dropped from cultivation, the Catawba being superior in quality, more resistant to rot and mildew and slightly earlier. It is now unknown and it is doubtful if there are any living vines in cultivation.

Alexander is generally considered a variety of Labrusca but there is much evidence to show that it is a hybrid of Labrusca and Vinifera. This was the opinion of some of the earlier writers but later it was discredited. Bartram gives as one of the distinguishing characters of Vinifera and American vines that the first show oval berries while the latter do not, but he makes an exception of Alexander. Why this should be an exception does not seem apparent unless it be credited to hybridity. Furthermore, the season of Alexander, which is very late, would also indicate foreign blood; a grape native of the vicinity of Philadelphia would supposedly be able to ripen itself in that locality, a thing that the Alexander seldom did perfectly, and it is spoken of in southern Indiana as being very late. Its place of origin ("in the vicinity of an old vineyard of European kinds") would indicate that there was an opportunity for hybridization to take place. The descriptions strongly suggest some of the coarser-textured of Rogers' hybrids.

This solution, if it be accepted, would account for the difference of opinion as to its origin. Bartram and Prince could see enough of the characters of the native in a hybrid so that they could be deceived into claiming it as a native, and Dufour on the other hand could see enough of the Vinifera

characters so that he felt there was no question as to its being of foreign origin.

Downing gives what is probably the most complete description of this variety we now have, although it was made from fruit raised some distance farther north than where the variety matures properly. He says: "It is quite sweet when ripe and makes a very fair wine but it is quite too pulpy and coarse for table use. The bunches are more compact and the leaves much more *downy* than those of the Isabella. Bunches rather compact, not shouldered. Berries of medium size, oval. Skin thick, quite black. Flesh with a very firm pulp, but juicy, and quite sweet and musky, when fully ripe, which is not till the last of October." Dufour speaks of the berries ripening unevenly, requiring the green ones to be picked out before sending to the wine press.

ALEXANDER WINTER.

(Labrusca, Vinifera?)

1. *N. Y. Sta. An. Rpt.*, 11:613. 1892. 2. *Ib.*, 14:275. 1895. 3. *Ib.*, 17:526, 548, 553. 1898.

Alexander Winter is chiefly valuable because of the length of time it will keep. As its name implies it is a *winter* grape. The flavor is most excellent and when well grown the appearance of bunch and grape is attractive. Another desirable quality is that the average number of seeds to the berry is small, being only two. The great defect of the variety is that, even with cross-pollinization, perfect clusters do not form. There are many green berries, and when ripe there are always some small seedless berries indicating imperfect fertilization. Vine and foliage indicate Labrusca parentage but the fruit suggests an admixture of Vinifera. Although rarely found in the gardens and vineyards of New York, Alexander Winter is well worth a place in the garden of the amateur and of the grape-breeder because of its excellent keeping qualities.

Alexander Winter was originated by S. R. Alexander, Bellefontaine, Ohio, from a lot of mixed seed planted in 1884. It was received at this Station in 1892. It seems not to have been tested elsewhere and is not generally handled by nurserymen.

Vine vigorous, injured in severe winters, productive. Foliage irregularly roundish, dark green. Flowers open in mid-season or earlier; stamens reflexed. It cannot be relied upon to set perfect clusters when standing alone and even when growing in a

mixed vineyard fails to set fruit well. Fruit ripens about with Salem, keeps a long time in edible condition. Clusters above medium to small, very heavily shouldered, loose, contain many small seedless fruits. Berries variable in size, the fully developed fruits averaging medium to large, roundish, dull, light and dark red, covered with thin lilac bloom or at times with faint tinge of grayish-blue, persistent. Skin covered with scattering dark-colored dots, rather thick but tender. Flesh tender, vinous, with indications of Vinifera parentage, sweetish to agreeably tart, flavor pleasing, good to very good in quality. Seeds large, few in number; raphe sometimes shows as a raised cord.

(I) ALICE.

(Labrusca.)

1. *Bush. Cat.*, 1894:84.

Alice is one of two New York seedlings of this name offered grape-growers, neither of which is worth a permanent place in viticulture. This grape is a white seedling of Martha, and much resembles that variety. It was originated by J. A. Putnam, Fredonia, New York, who writes that the vine was first fruited in 1890. On account of its close resemblance to Martha it was generally considered unworthy of perpetuation and is now practically obsolete.

(II) ALICE.

(Labrusca, Aestivalis?, Vinifera?)

1. *Rural N. Y.*, 46:36. 1887. *fig.* 2. *Ib.*, 47:161. 1888. 3. *Amer. Gard.*, 9:7. 1888. *fig.* 4. *N. Y. Sta. An. Rpt.*, 11:613. 1892. 5. *Amer. Gard.*, 16:423. 1895. *fig.* 6. *Mass. Hort. Soc. Rpt.*, 1895:233. 7. *N. Y. Sta. An. Rpt.*, 14:275. 1895. 8. *Minn. Hort. Soc. Rpt.*, 1896:134. *fig.* 9. *Rural N. Y.*, 56:602, 679. 1897. 10. *N. Y. Sta. An. Rpt.*, 17:526, 548, 553. 1898.

A brief record of the origin, history and gross characters of Alice is herewith given. The grape is of little value in New York.

This variety was found growing near an old stone wall by Ward D. Gunn of Clintondale, Ulster County, New York, and was transplanted into his vineyard in the spring of 1884. It was introduced by F. E. Young of Rochester. This is a Labrusca, with a few characters that indicate Aestivalis and Vinifera blood.

Vine vigorous to medium, hardy, produces fair crops. Leaves medium to large, sometimes strongly rugose, with lower surface heavily pubescent. Flowers self-fertile or nearly so, open in mid-season; stamens upright. Fruit ripens with Concord or slightly earlier, the different clusters varying in season of ripening, ships well and keeps in good condition far into the winter. Clusters intermediate in size, usually with a small

single shoulder, medium to compact. Berries above medium to small, roundish although frequently strongly compressed on account of compactness of cluster, rather dull, pale red, somewhat lighter than Catawba, covered with thin lilac bloom, persistent. Skin very thick. Flesh tender, vinous, somewhat foxy, sweet at skin to agreeably tart at center, good in quality, resembling Diana or Catawba. The seeds, which are few in number, often show a rough granular, warty surface around the chalaza.

ALLEN'S HYBRID.

(Labrusca, Vinifera.)

1. *Mag. Hort.*, 20:474. 1854. 2. *Ib.*, 21:182. 1855. 3. *Essex Inst. Proc.*, 1:195. 1856. 4. *Mag. Hort.*, 26:66. 1860. 5. *Am. Pom. Soc. Cat.*, 1862:90. 6. Strong, 1866:330. 7. Mead, 1867: 176, 187, 194. *fig.* 8. *Ga. Sta. An. Rpt.*, 13:320. 1900. 9. *Ga. Sta. Bul.*, 53:40. 1901.

A half century ago Allen's Hybrid was the vine of promise in America. It was the first named hybrid between *Vitis labrusca* and *Vitis vinifera* to be disseminated and as such awakened the slumbering hopes of the horticulturists of a continent. American grape-growers had all but given up the expectation of ever growing the European grape in the New World when Allen announced this hybrid. Auspicious hope! Grape-growers everywhere hybridized grapes and the growing of the vine received an impetus surpassed only by that of the introduction of the Concord. Botanists and horticulturists had doubted the possibility and the practicability of crossing the Old World grape with the New World species, when this variety removed the doubt and led them to hope that we were to have varieties of grapes in America possessing many of the coveted characters of the grapes of Europe.

After its introduction the variety was tested wherever grapes were grown in the United States and Canada,—and for a generation. Its high quality, entirely free from what was then considered objectionable foxiness, handsome appearance, with some other qualities of its Vinifera parent, at first indicated that it was a most valuable acquisition; but it soon developed the tenderness of vine and susceptibility to fungi and insects which have come to be the distinguishing marks of the primary hybrids of native species and the European grape. Its cultivation has long since ceased and it has now a place only in the history of American grape-growing. It has been one of the parents of a number of other grapes, chief of which is Lady Washington, produced from a cross between Allen's Hybrid and

Concord. The grape is lost to cultivation but the name should be perpetuated as commemorating one of the great events in American viticulture.

Allen's Hybrid was originated by John Fiske Allen of Salem, Massachusetts. In the winter of 1843–44 he fertilized the blossoms of an Isabella vine growing in a greenhouse with pollen from Chasselas de Fontainbleau. Seeds were produced and planted the next year the vines of which began to fruit in 1853 and 1854. One of these seedlings of greater merit than the others was saved and named Allen's Hybrid; the others were destroyed.

"The vine is not hardy, and requires winter protection, but is vigorous and productive, ripening quite early, and in sheltered situations is a desirable variety. Bunch medium to large, shouldered, compact; berry medium to large, round, sometimes depressed; skin thin, white, changing to pale yellow when fully ripe; flesh tender, juicy, sweet, rich, with a delicate slightly vinous flavor, and one of the best in quality."[1]

AMBER QUEEN.

(Vinifera, Riparia, Labrusca.)

1. *Mass. Hort. Soc. Rpt.*, **1870**:33. 2. *Ib.*, **1873**:101. 3. *Bush. Cat.*, **1883**:70. 4. *N. Y. Sta. An. Rpt.*, **8**:342. 1889. 5. *Ib.*, **17**:548, 552. 1898. 6. *Mo. Sta. Bul.*, **46**:42, 44, 46, 76. 1899. 7. *Ga. Sta. Bul.*, **53**:40. 1901.

Amber Queen is interesting chiefly as having sprung from three species, *Vitis vinifera*, *Vitis labrusca* and *Vitis riparia*, and as showing the characters of all in some degree. The fruit strongly indicates the Vinifera parentage, the continuous tendrils Labrusca, and the vine, in vigor of growth and several botanical characters, shows its descent from Riparia. The variety has never been much grown, and when cultivated could be best characterized by its faults—of not setting fruit well, susceptibility to mildew and black-rot and of unproductiveness. It is, however, reasonably successful in especially favorable localities.

The variety was first exhibited at a meeting of the Massachusetts Horticultural Society in 1870. It was originated by N. B. White, Norwood, Massachusetts, from seed of Marion fertilized with Black Hamburg. Bush questions this parentage owing to the fact that Amber Queen frequently shows continuous tendrils. In the vineyard of this Station, however,

[1] Downing, **1872**:119 app.

Marion shows continuous as well as intermittent tendrils, indicating that it would be quite possible for the Amber Queen to have inherited its aberrant tendrils from that source.

Vine a strong grower, usually hardy, produces light crops except in favored locations, both leaves and fruit subject to attacks of fungal diseases. Leaves above medium size, roundish, rather thick. Flowers sterile or nearly so, practically incapable of setting fruit when self-fertilized, open about in mid-season and bloom a long time; stamens reflexed. Fruit variable in season of ripening, sometimes before, at other times after Concord, usually requires more than one picking to secure the fruit at its best, does not keep well as the berries soon wither. Clusters variable in size but not large, usually loose and open but sometimes compact. Berries not uniform in size, roundish to oval, dark red covered with more or less lilac bloom, somewhat resembling Catawba in color, not very firm as the berries soon shrivel, persistent. Flesh very juicy, soft and tender, mildly sweet at skin to acid at center, good to very good in quality. Seeds variable in size, frequently with enlarged neck; chalaza distinctly above center.

AMBROSIA.

(Labrusca, Vinifera.)

1. *N. Y. Sta. An. Rpt.*, **10**:494. 1891. 2. *Ib.*, **11**:614. 1892. 3. *Ib.*, **17**:526, 545, 547, 553. 1898.

Ambrosia is a New York seedling which, though introduced nearly twenty years ago, has not found favor with grape-growers. In quality, while hardly worthy of its name, it ranks high and for this reason may be worth a place in the vineyard of the amateur. On the Station grounds it shells badly, differing in this respect from its supposed parent Salem.

The variety was originated by Alfred Rose of Penn Yan, New York, from seed of Salem planted in 1884. It was received for testing by this Station in 1888. There are no records of its having been tested elsewhere.

Vine vigorous, healthy, usually hardy, moderately productive. Leaves intermediate in size; lower surface heavily tinged with bronze. Flowers occasionally on plan of six, fertile, open in mid-season or earlier; stamens upright. Fruit ripens about with Concord or Delaware, appears to keep well. Clusters large to medium, broadly and irregularly tapering, sometimes blunt at ends, usually not shouldered or shoulder when present small and short, compact to medium. Berries large to above medium, slightly oblate, attractive green changing to a yellow tinge, covered with a more or less gray bloom, drop from clusters easily. Flesh rather transparent and tender, mild, sweetish from skin to center, pleasant-flavored but somewhat variable in flavor and quality,

ranking from medium to very good. Seeds separate readily from the pulp, quite large; raphe often shows as a partly submerged cord.

AMERICA.

(Lincecumii, Rupestris.)

1. *N. Y. Sta. An. Rpt.*, 11:614. 1892. 2. *An. Hort.*, 1892:176. 3. Husmann, 1895:116, 125. 4. *N. Y. Sta. An. Rpt.*, 14:276. 1895. 5. *Ib.*, 17:520, 548, 553, 1898. 6. *Tex. Sta. Bul.*, 48:1149, 1152. 1898. *fig.* 7. *Am. Pom. Soc. Cat.*, 1899:29. 8. *Mo. Sta. Bul.*, 46:43, 45, 46, 47. 1899. 9. *Ga. Sta. An. Rpt.*, 13:320. 1900. 10. *Tex. Sta. Bul.*, 56:263, 274. 1900. *fig.* 11. *Rural N. Y.*, 60:614. 1901. 12. *Mo. Hort. Soc. Rpt.*, 1904:305.

America is illustrated and described in *The Grapes of New York* chiefly because of its possible value in breeding work. It may also be worth growing in a limited way in this State for wine-making as it is reputed by all who have tried it to be one of the best native grapes for a dark red wine and to make a very good port. The notable qualities of the variety as it grows at Geneva are: Vigor of growth, health of foliage, persistence of berries, high sugar content and the peculiar flavor of the fruit, liked by some and not by others. At least it can be said that the taste of America is new to northern grape-growers; and, since it wholly lacks the foxy taste and aroma of Labrusca, it offers possibilities for breeding varieties lacking the distinguishing flavor of Concord and Niagara. This variety would probably be somewhat objectionable in northern markets as a table fruit because of the highly colored juice, which stains the hands and the lips. The flavor is decidedly that of *Vitis rupestris*.

Its originator claims for America great resistance to heat and cold; and our experience, though limited, confirms the claim. So, too, it is said to be a suitable stock upon which to graft Vinifera varieties to resist phylloxera, a matter concerning which our experience in this region offers nothing, though the parentage strongly suggests such resistance to be the case. The vigor of the vine and the luxuriance of the foliage, probably still more marked farther south, cannot but make it an excellent sort for arbors. But the fact must be emphasized that America is preeminently of interest to the northern grape-grower because it gives him an opportunity to make use in breeding work, of the qualities of Rupestris and Lincecumii, southern species combined in this variety and thriving in the combination in northern conditions.

AMERICA

The grape described here was originated by Munson from seed of *Jaeger No. 43* pollinated by a male Rupestris. It was received at this Station in 1892 which was practically the date of its introduction. America has been widely tested by experiment stations and the reports of its behavior are generally favorable.

Vine vigorous to very vigorous, usually hardy, produces heavy crops. Canes long, numerous, of medium size, dark reddish-brown, covered with heavy blue bloom; nodes enlarged, strongly flattened; internodes of average length; diaphragm medium in thickness; pith rather large; shoots glabrous, covered with blue bloom; tendrils intermittent, long, bifid.

Leaf-buds open in mid-season, medium to small, of average length, rather thick, conical to obtuse. Young leaves tinged on both sides, making the prevailing color rose-carmine. Leaves healthy, inferior in size, rather thin; upper surface attractive medium green, glossy, smooth; lower surface light green, hairy; veins indistinct; lobes lacking or faintly showing, terminal lobe acute; petiolar sinus moderately deep and wide; teeth of average depth and width. Flowers sterile, usually on plan of six, open late; stamens reflexed.

Fruit ripens with Concord or later, keeps well. Clusters nearly large, above medium length, broad, tapering, somewhat cylindrical, irregular, usually single-shouldered, averaging two or three bunches per shoot, usually compact; peduncle of medium length, rather thick; pedicel short, slender, covered with few, small, inconspicuous warts; brush short, thick, with reddish tinge. Berries medium to small, variable in size, roundish, attractive black or purplish-black, glossy, covered with heavy blue bloom, persistent, somewhat soft. Skin thin, very tender, adheres slightly to the pulp, contains an unusually large amount of purplish-red pigment, slightly astringent. Flesh dull white with faint reddish tinge, translucent, not very juicy, tender, not stringy, melting, spicy, vinous, sweet, good in quality. Seeds separate easily, two to five, average four, above medium size, long, of moderate width, pointed, yellowish-brown; raphe prominent, cord-like; chalaza large, slightly above center, irregularly circular, distinct.

There is a second variety under the name America, as Ricketts years ago introduced an America which has probably passed from cultivation.

AMETHYST.

(Labrusca, Vinifera, Bourquiniana.)

1. *Am. Pom. Soc. Rpt.*, 1903:82.

Amethyst is one of Munson's hybrids as yet unknown to the grape-growers of New York. It is a most excellent table grape, coming after the Delaware which it much resembles in habit of growth and in fruit.

It is a stronger grower than Delaware, has proved to be as hardy, is seemingly not attacked readily by black-rot, but like the Delaware is susceptible to mildew. In quality it ranks with Delago, Brilliant, Goethe, Lindley and Delaware, all parents one or two generations removed. According to Munson it makes a good white wine. It is at least an amateur's grape, to be sought because of high quality. It was originated by T. V. Munson of Denison, Texas, being first fruited in 1898. It is a cross of Delago and Brilliant and was introduced in 1902.

Vine moderately vigorous, hardy, medium to productive, susceptible to attacks of mildew. Canes intermediate in length, number and thickness, light and dark brown deepening in color at the nodes. Leaves medium to nearly large, light green; lower surface pale green, pubescent. Flowers nearly fertile to slightly sterile, open rather late; stamens upright. Fruit ripens after Delaware, keeps well. Clusters medium to large, intermediate in length and width, usually single-shouldered, compact. Berries above medium to small, roundish to oval, strongly narrowing toward the pedicel on account of compactness of cluster, rather attractive dark red, covered with lilac bloom, usually persistent. Skin thick, of average toughness. Flesh rather tough, solid, vinous, sweetish at skin to agreeably tart at center somewhat resembling Brilliant, good to very good in quality. Seeds intermediate in size and length, often with enlarged neck.

AMINIA.

(Labrusca, Vinifera.)

1. *Mag. Hort.*, 31:333. 1865. 2. *Mass. Hort. Soc. Rpt.*, 1865:40. 3. *N. Y. Agr. Soc. Rpt.*, 1870:276. 4. *Mich. Pom. Soc. Rpt.*, 1875:341. 5. *Bush. Cat.*, 1883:70. 6. *Ill. Sta. Bul.*, 28:252. 1893. 7. *N. Y. Sta. An. Rpt.*, 17:526, 548, 553. 1898. 8. *Mo. Sta. Bul.*, 46:42, 44, 46, 48, 54. 1899. 9. *Ga. Sta. An. Rpt.*, 13:320. 1900.

ROGERS' No. 39 (1, 2, 3, 4). *Rogers' No. 39* (5).

Aminia is deserving the recognition of a color-plate and a full description in this work because in quality it is one of the best early grapes for New York. Besides being early and of good quality it keeps well. It ripens with or a little after Moore Early and Hartford, producing berries of high quality and attractive appearance but the bunches are small, variable in size, not well formed as a rule, and the berries ripen unevenly. The vine is vigorous, not as hardy as might be wished for in New York, nor as productive as a commercial variety must be, and shows the weaknesses characteristic of all of Rogers' hybrids.

For an account of the origin of the Aminia see page 390 under "Rogers'

AMINIA

Hybrids." In 1867 Bush secured vines of *Rogers' No. 39* from several different sources. When these came into bearing he found he had three different varieties. The original vine of *Rogers' No. 39* having been destroyed it was impossible to determine which was the correct one. Bush selected the best of these and to avoid further confusion, with the consent of Rogers, named it Aminia. But in spite of Bush's care there are still at least two different varieties cultivated under this name. Although the Aminia is found in many varietal vineyards, an examination of over forty of the leading grape nurserymen's catalogs shows only three who offer vines for sale.

Vine vigorous, not always hardy, lacking somewhat in productiveness. Canes slightly rough, long, medium in number, thickish, dark brown to reddish tinge; nodes enlarged, usually not flattened; internodes medium to long; diaphragm somewhat thick; pith large; shoots pubescent; tendrils intermittent, long to medium, trifid to bifid, persistent.

Leaf-buds open in mid-season, about medium in size and length, above average thickness, prominent, obtuse to conical. Young leaves colored on both sides, prevailing color rather bright carmine. Leaves large, of average thickness; upper surface medium green, rather dull, nearly smooth; lower surface light green, slightly pubescent; veins distinct; lobes usually three, terminal lobe acute; petiolar sinus rather deep, narrow, often closed and overlapping; basal sinus usually lacking; lateral sinus nearly shallow, narrow; teeth somewhat shallow, inclined to wide. Flowers open in mid-season, sterile; stamens reflexed.

Fruit ripens early, just after Hartford, keeps well. Clusters medium to small, of average length, broad, irregular, somewhat conical, sometimes with a long shoulder, rather loose; peduncle long, thick; pedicel longish, not slender, broad at point of attachment, covered with few warts; brush short, thick, brownish-red. Berries range from large to small, decidedly variable, roundish, dull black, covered with blue bloom, persistent, firm. Skin rather thick, somewhat tender, adheres considerably to the pulp, contains a large amount of purplish-red pigment, slightly astringent. Flesh greenish, translucent, moderately tender, rather solid and coarse, foxy, sweet at skin but somewhat acid at center; quality good. Seeds adherent, one to six, average three and four, very large, long, fair width, sharply pointed, light brown with yellow tinge; raphe obscure; chalaza large, above center, irregularly circular to oval, distinct.

ANTOINETTE.

(Labrusca.)

1. *N. J. Hort. Soc. Rpt.*, 1881:10. 2. *Rural N. Y.*, 48:801. 1889. *fig.* 3. *Bush. Cat.*, 1894:86. 4. *N. Y. Sta. An. Rpt.*, 15:294. 1896. 5. *Ib.*, 17:526, 545, 547, 553. 1898. 6. *Kan. Sta. Bul.*, 110:235. 1902.

Antoinette is a white seedling of Concord which, on the Station grounds, and in the State at large, has not shown sufficient merit to warrant its recommendation. It is very similar to the several other white seedlings of Concord, all of which have a decided varietal resemblance and which, except in color of fruit, have the general characters of Concord.

T. B. Miner, of New Jersey, produced Antoinette from Concord seed over thirty years ago.

Vine medium to vigorous, usually hardy, fairly productive. Canes medium to short, usually roughened. Leaves of average size and thickness with lower surface heavily pubescent. Flowers open in mid-season or earlier, fertile; stamens upright. Fruit ripens with Concord or slightly earlier, keeps well. Clusters medium to small, cylindrical to tapering, usually not shouldered, variable in compactness. Berries large to below medium, roundish, dark dull green or whitish, often with a tinge of yellow, covered with heavy gray bloom, inclined to drop from pedicel, not firm. Skin usually covered with small scattering dark dots, thin, variable in toughness. Flesh rather tough, sweetish next the skin, tart at center, slightly foxy, good to very good in quality. Seeds separate from the pulp with difficulty, not numerous, rather large, dark brown.

AUGUST GIANT.

(Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, 1872:95. 2. *Bush. Cat.*, 1883:72. 3. *Ill. Sta. Bul.*, 28:252. 1893. 4. *Col. Sta. Bul.*, 29:18. 1894. 5. *Bush. Cat.*, 1894:86. 6. *Del. Sta. An. Rpt.*, 7:134, 136. 1895.

The originator of August Giant has managed to secure a hybrid of *Vitis labrusca* and *Vitis vinifera* in which the fruit characters are decidedly those of the latter species. In appearance of berry and in taste, when well grown, August Giant greatly resembles Black Hamburg. The vine is unusually vigorous and, considering its parentage, is quite hardy. The foliage is thick and luxuriant, though somewhat subject to mildew. The vigor of vine, beauty of foliage, and the high quality of the fruit make the variety a desirable one for the amateur, especially where an ornamental vine is wanted. The variety needs to be grown where the fruit can have a long and favorable maturing season.

August Giant was originated by N. B. White of Norwood, Massachusetts, in 1861 from seed of an early, large-berried red grape of the Labrusca type, pollinated by Black Hamburg.

AUGUST GIANT

Vine very vigorous, usually hardy, not a heavy bearer, somewhat subject to mildew. Canes medium to long, numerous, thick, light to dark brown; nodes enlarged, slightly flattened; internodes below average length; diaphragm rather thick; pith large to medium; shoots slightly pubescent; tendrils continuous, medium to long, bifid to trifid.

Leaf-buds open in mid-season, of average size, short, rather thick, conical to obtuse. Young leaves tinged with carmine on lower side extending beyond border of upper side. Leaves medium to very large, thick; upper surface dark green, glossy, smooth, slightly rugose on older leaves; lower surface pale green to indistinct bronze, pubescent; veins rather indistinct; lobes usually three, terminal lobe acute; petiolar sinus medium to deep, narrow, frequently closed and overlapping; lateral sinus shallow to a mere notch; teeth shallow, narrow. Flowers open in mid-season, sterile; stamens reflexed.

Fruit ripens about a week later than Moore Early, keeps well. Clusters of average size or sometimes larger, medium to short, rather broad, irregularly tapering, not uniform, usually single-shouldered, loose to nearly compact; peduncle long to medium in length, somewhat thick; pedicel longish, thick, wide at attachment to berry, covered with numerous large warts; brush short, thick, greenish or with brown tinge. Berries resemble Black Hamburg in general appearance but somewhat variable, averaging large, oval to roundish, dark purplish-red or black, dull, covered with thick blue bloom, hang well to pedicel, firm. Skin of average thickness, tough, adheres slightly to pulp, contains a small amount of bright red pigment, strongly astringent. Flesh greenish, translucent, somewhat tough, stringy, agreeably tart at skin but acid at center, good in quality, resembling Black Hamburg. Seeds adherent, one to four, averaging three, large, rather broad, long, plump, somewhat blunt, light brown; raphe usually obscure; chalaza somewhat large, above center, irregularly circular, distinct.

AUTUCHON

(Riparia, Labrusca, Vinifera.)

1. Downing, **1869**:530. 2. *Grape Cult.*, **1**:325, 334, 368. 1869. *fig.* 3. *Horticulturist*, **24**:19 1869. 4. *Ib.*, **25**:74. 1870. 5. *Grape Cult.*, **2**:205. 1870. 6. Barry, **1872**:424. 7. *Horticulturist*, **27**:14. 1872. 8. *Montreal Hort. Soc. Rpt.*, **1881**:150. 9. *Bush. Cat.*, **1883**:71. *fig.* 10. *Minn. Hort. Soc. Rpt.*, **1884**:249. 11. *Can. Cen. Exp. Farms Rpt.*, **1891**:134. 12. *Traité gen. de vit.*, **5**:200. 1903.

Arnold's No. 5 (3). *Arnold's No. 5* (1, 2, 4, 5, 6, 8, 9, 10, 12).

Autuchon was introduced about 1870 with great éclat. It was heralded as the "best white grape in America—a veritable treasure." Later it was grown and somewhat widely tested in France. But in neither country has it come up to expectations. In America it has proved to be somewhat tender to cold, an unreliable bearer and subject to rot and mildew. In France it shows the same weaknesses and is not as resistant to phylloxera as are other and better American sorts. The quality of Autuchon is excel-

lent, being that of its European parent with the agreeable sprightliness of its American ancestor. According to the reports regarding it from France it makes a "wine remarkably white, vinous and fresh, slightly musky and agreeable, and of a beautiful yellow color."[1]

Autuchon was originated by Charles Arnold of Paris, Canada, from seed planted in 1859. The parents are Clinton pollinated by Golden Chasselas. It is not in the Station collection, and the following description is taken from the *Bushberg Catalogue*.[2]

"Leaves dark green, very deep lobed and sharp pointed serratures; the unripe wood is very dark purple, nearly black. Bunches very long, not heavily shouldered, rather loose; berries medium size, round, white (green), with a moderately firm, but readily melting flesh, and an agreeable sprightly flavor, resembling the White Chasselas. Skin thin, without astringency. Ripens with the Delaware."

BACCHUS.

(Riparia, Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1879 (cited by 2). 2. *Gar. Mon.*, 22:176. 1880. 3. *Mass. Hort. Soc. Rpt.*, 1880:238. 4. *Bush. Cat.*, 1883:72. *fig.* 5. *N. Y. Sta. An. Rpt.*, 9:326. 1890. 6. *Ill. Sta. Bul.*, 28:252. 1893. 7. *Tenn. Sta. Bul.*, Vol. 9:167. 1896. 8. *Rural N. Y.*, 59:7. 1900.

Bacchus is a wine grape deemed worthy by its originator to bear the name of the god of wine. It is an offspring of Clinton which it much resembles in vine and leaf characters but surpasses in quality of fruit and in productiveness. In New York Bacchus has very generally superseded Clinton though neither is extensively grown. It is vigorous, productive, hardy, free from mildew and adapted to a variety of soils; it requires a long season for full maturity and cannot therefore be well grown in northern locations though the seasons in the grape regions of New York are usually sufficiently long. The wine-makers of the State mention it as one of the most desirable grapes for a dark red wine. While it is generally too tart for a dessert grape, yet if left on the vine until frost, as late as it can hang, it becomes a good late table grape. Bacchus is one of the best, if not the best, cultivated types of Riparia, or of the Clinton group of Riparia. Its special points of merit from a broad standpoint are: Resist-

[1] *Traité gen. de vit.*, 5:201. 1903.

[2] *Bush. Cat.*, 1883:71.

BACCHUS

ance to cold, resistance to phylloxera, value for wine-making, freedom from fungi and insects, productiveness, ease of multiplication, and capacity to bear grafts. For the above qualities it offers exceptional opportunities to the plant-breeder. Its most prominent limitations are: Poor quality for table use, inability to withstand dry soils or droughts and non-adaptability to soils containing much lime.

There is no question about the origin of Bacchus. It is a seedling of Clinton which, as mentioned above, it greatly resembles in every character. The variety was originated by J. H. Ricketts of Newburgh, New York, and was first exhibited by him before the American Pomological Society in 1879. It is well known in eastern United States and, as in New York, is highly thought of as a wine grape.

Vine very vigorous, hardy, healthy, productive. Canes average in length, numerous, of medium size, rather light to dark brown with some bloom at nodes which are somewhat enlarged and flattened; internodes intermediate in length; diaphragm below average thickness; pith large to medium; shoots nearly glabrous; tendrils continuous, of mean length, bifid.

Leaf-buds open early, of average size, rather short, thick, obtuse to conical. Young leaves faintly tinged with carmine on lower side only, prevailing color pale green with faint carmine tinge. Leaves medium to small, thin; upper surface dark green, glossy, smooth; lower surface dull green, not pubescent; veins indistinct; lobes three in number, terminal lobe acuminate; petiolar sinus medium to shallow, narrow sometimes nearly overlapping; basal sinus lacking; lateral sinus shallow, wide; teeth of average depth and width. Flowers open early, sterile; stamens upright.

Fruit ripens late and keeps well, hanging a long time on the vine. Clusters small to medium, below average length, rather slender, uniform, cylindrical, often single-shouldered, compact; peduncle almost short, intermediate in size; pedicel short to medium, slender, covered with a few small warts; brush short, wine-colored. Berries variable in size, below medium to small, roundish, black, glossy, covered with a moderate amount of blue bloom, hang well to pedicels, firm. Skin thin, of average toughness, adheres only slightly to the pulp, contains much wine-colored pigment, slightly astringent. Flesh dark green, translucent, fine-grained, somewhat tough, vinous, sweet at skin to tart near seeds, with slight Riparia spiciness, of medium quality, improving as the season advances. Seeds cling to pulp, one to four, average two, often many abortive, above medium size, rather short and wide, usually plump, sharply pointed, brownish; raphe obscure; chalaza above center, pear-shaped, distinct. Must registers 95°–110°.

BAILEY.

(Lincecumii, Labrusca, Vinifera.)

1. *Rural N. Y.*, 50:221, 222. 1891. *fig.* 2. *Bush. Cat.*, 1894:159. 3. *N. Y. Sta. An. Rpt.*, 14: 276. 1895. 4. *N. Y. Sta. An. Rpt.*, 17:526, 548, 553. 1898. 5. *Tex. Sta. Bul.*, 48:1149, 1153. 1898. *fig.* 6. *Am. Pom. Soc. Cat.*, 1899:20. 7. *Tex. Sta. Bul.*, 56:275. 1900. 8. *Rural N. Y.*, 60:614. 1901.

In the Bailey are combined characters of three species, Vinifera, Labrusca and Lincecumii — characters attained in three widely separated regions, Europe, Massachusetts, and Texas. Moreover the characters of Vinifera and Labrusca have been transmitted to Bailey through Triumph, in which variety they are as well combined as in any other hybrid of the two species. The Lincecumii parent, Big Berry, is at the head of Munson's "Big Berry Family" of hybrids; brought in from the wild, it is one of the best representatives of its species. Bailey, therefore, has royal blood and if parentage counts in grapes, it should prove valuable. Unfortunately New York, at least the Station vineyard, is a little too far north for the fruit to mature well. In cold winters the vine is liable to winter injury. In seasons when the grapes have matured the appearance and quality of the fruit have been such as to recommend it. Its vigor of vine and productiveness give it additional value, and if not to be recommended for commercial plantings in this State, it can surely be named as valuable for breeding purposes. The name of the variety was bestowed upon it by its originator in honor of L. H. Bailey, known by all grape-growers for his services to viticulture.

Bailey was originated by Munson from seeds of a wild Post-oak grape called Big Berry, fertilized with pollen of Triumph. The seed was planted in 1887 and the original vine came into fruiting in 1889–90. The variety is now very generally disseminated throughout the East, and the reports of its behavior, in the North at least, generally accord with that from this Station given above.

Vine vigorous, injured in severe winters, produces good crops of fruit. Canes dark reddish-brown, of good length, of medium size and number. Leaves average in size, light green, dull to slightly glossy, with very distinct veins on lower surface which is cobwebby. Flowers open late, fertile; upright stamens.

Fruit ripens unevenly almost as late as Catawba, keeps well. Clusters rather large and

long, not very broad, often blunt at ends, cylindrical to irregularly tapering, usually not shouldered but sometimes with a small, short shoulder, compact. Berries persistent, medium to large, vary in shape from roundish to ovate on account of compactness of clusters, change in color from purplish-black to black, covered with a heavy blue bloom. Skin medium to thin, strongly astringent, tough, adheres somewhat to the pulp, contains a large amount of purplish-red pigment. Flesh moderately juicy and tender, coarse, vinous, good in quality, releases the seeds rather easily. Seeds numerous, medium to above in size, moderately broad, above medium to medium length, blunt, brownish; raphe buried in a shallow, narrow groove; chalaza large, above center, circular to oval, distinct.

BANNER.

(Labrusca, Vinifera, Bourquiniana?)

1. *U. S. D. A. Yr. Bk.*, 1906:361. *col. pl.*

Banner is one of the newer offerings for pomological honors. The Station was not able to secure vines until 1906 and these have not yet fruited. So far as is known it is not grown elsewhere in the State. Since the variety has been well spoken of by horticulturists who have seen it, and since it has been deemed worthy a place among the promising new fruits illustrated and described in the *Year Book of the United States Department of Agriculture* for 1906, the variety is discussed here. The technical description of it is quoted from the above reference.

The variety was originated by Joseph Bachman of Altus, Arkansas, from seed of Lindley pollinated by Delaware. The seed was planted in 1898. The originator states that he suspects a Stark-Star vine growing alongside also furnished pollen as the Lindley blossoms were unprotected.

"Cluster large, broad conical, heavily shouldered, very compact; stem short; berries globular, of medium size, adhering tenaciously to the small green peduncles; skin moderately thick, and rather tough; amber red and glossy, but covered with a profuse bloom; flesh translucent, juicy, and rather meaty; seeds few, very small, brown; flavor refreshing subacid to sweet and aromatic; quality good to very good. Season late August and early September in Franklin county, Arkansas, ten days or two weeks later than Delaware."

BARRY.

(Labrusca, Vinifera.)

1. *U. S. D. A. Rpt.*, 1864:136. 2. *Mass. Hort. Soc. Rpt.*, 1865:40. 3. *Mag. Hort.*, 34:345. 1868. 4. *Am. Jour. Hort.*, 5:11. 1869. *fig.* 5. *Horticulturist*, 24:126. 1869. 6. *Am. Pom. Soc. Cat.*,

1869:42. 7. *Grape Cult.*, 1:182, 326. 1869. 8. *Bush. Cat.*, 1883:74. *fig.* 9. *Mich. Bd. Agr. Rpt.*, 24:133. 1885. 10. *Ill. Sta. Bul.*, 28:252. 1893. 11. *Rural N. Y.*, 52:671. 1893. 12. *Tenn. Sta. Bul.* Vol. 9:191. 1896. 13. *N. Y. Sta. An. Rpt.*, 17:526, 548, 549, 552, 553. 1898. 14. *Tex. Sta. Bul.*, 48:1149, 1153. 1898. 15. *N. Y. Sta. An. Rpt.*, 18:370, 395. 1899.

ROGERS' No. 43 (1, 2, 3, 4). *Rogers' No. 43* (5, 6, 7, 8, 11, 12).

Barry, first known as *Rogers' No. 43*, was dedicated in 1869, by Rogers, to Patrick Barry, distinguished nurseryman, pomologist and viticulturist. Happily the variety is such that it should long honor the name it bears. The Barry is one of our best black grapes, resembling in berry and somewhat in flavor and keeping quality its European parent, Black Hamburg. The flavor is delicate and sweet, the flesh tender, with thin skin and unobjectionable seeds. The appearance of berry and bunch is attractive. The fruit keeps splendidly, and as this is written, on the twenty-ninth of February, leap-year, there are before the writer bunches of the Barry, kept in common storage without wrapping or other special care, which are in perfect condition. The vine is vigorous, hardy, and productive, but susceptible to mildew. The ripening season is usually said to be that of the Concord but, while it may color with the Concord it requires a longer time to ripen thoroughly and it is not at its best, or even good, unless properly matured. For the table, for winter keeping, and for an amateur grape in general the Barry may be highly recommended.

For an account of the origin of Barry see page 390 under "Rogers' Hybrids." It is first mentioned separately from the rest of Rogers' hybrids in 1864, though not named until 1869. Barry was placed on the list of the American Pomological Society in 1869 where it is still retained. It is known and grown in the garden throughout the grape regions of eastern America.

Vine vigorous, usually hardy, productive, somewhat susceptible to mildew. Canes long to very long, numerous, usually thick, dark brown to slightly reddish-brown covered with a small amount of blue bloom; nodes not enlarged, very slightly flattened; internodes intermediate in length; diaphragm of average thickness; pith medium to above in size; shoots nearly glabrous; tendrils intermittent, fair length, bifid to trifid.

Leaf-buds open early, of average size, short, of medium thickness, obtuse to conical. Young leaves heavily tinged with carmine on lower surface, faintly tinged along margin of upper surface, prevailing color bright carmine. Leaves large to medium, of average thickness; upper surface light green, slightly glossy, nearly smooth; lower surface pale green, somewhat pubescent; veins rather indistinct: lobes vary from none to three, terminus acute; petiolar sinus deep, narrow, sometimes closed and overlapping; basal

BARRY

sinus usually lacking; lateral sinus shallow and narrow; teeth shallow to medium, of average width. Flowers open in mid-season, sterile; stamens reflexed. Fruit ripens with Concord or later, keeps very late. Clusters variable in size, medium to short, very broad, slightly tapering to nearly cylindrical, upper part of cluster often subdivides into several parts making compound clusters, frequently double-shouldered, usually compact; peduncle short, medium to rather stout; pedicel above average length, moderately thick, covered with few small warts, enlarged at point of attachment with fruit. Berries large, oval to spherical, dark purplish-black to black, glossy, covered with heavy blue bloom, adhere well to pedicel. Skin rather thin, tough, adheres strongly to pulp, contains but little pigment, not very astringent. Flesh pale green, translucent, tender when ripened under favorable conditions, stringy, vinous, pleasant-flavored, sweet next the skin, agreeably tart at center, above average quality. Seeds slightly adherent, one to five, average three, nearly large to medium, usually long, of mean breadth, deeply notched, rather blunt but often with slightly enlarged neck, brownish; raphe usually obscure, sometimes showing as a faint ridge in a broad groove; chalaza nearly small, pear-shaped or circular, above center, distinct.

BEACON.

(Lincecumii, Labrusca.)

1. *Ga. Sta. An. Rpt.*, 13:312, 321. 1890. 2. *An. Hort.*, 1892:176. 3. *Bush. Cat.*, 1894:159. 4. Husmann, 1895:126. 5. *Rural N. Y.*, 55:592. 1896. 6. *Tex. Sta. Bul.*, 48:1149, 1153. 1898. *fig.* 7. *N. Y. Sta. An. Rpt.*, 17:526, 548. 1898. 8. *Am. Pom. Soc. Cat.*, 1899:29. 9. *Mo. Sta. Bul.*, 46:48, 76. 1899. 10. *Tex. Sta. Bul.*, 56:275. 1900. *fig.* 11. *Ga. Sta. Bul.*, 53:40, 51, 53. 1901. *fig.*

BIG B CON (7).

Beacon is another of Munson's hybrids, a cross between Labrusca and Lincecumii. It was received at this Station in 1892 and has borne fruit many times since so that there has been abundant opportunity to see grapes and vine. The variety is not especially well adapted to New York as the fruit is dull in color, lacking in quality, and shells somewhat badly. The vine is very vigorous, bearing a handsome, compact mass of foliage which retains its color and freshness throughout drouths and the heat of summer. In New York it must compete with Concord in commercial vineyards and since it does not equal that variety, taking its character as a whole, it cannot be recommended as a market grape. Its quality and appearance are such that it will never be largely grown by the amateur in the North. The variety, however, is of much interest and of possible value to the grape-breeder.

Munson produced Beacon in 1887 from seed of Big Berry (a variety of

Lincecumii) pollinated by Concord, securing the first fruit in 1889. The variety has been generally disseminated among grape specialists and experiment stations and is now well known by grape-growers in general.

Vine a medium to very strong grower, not always hardy, productive. Canes short, medium to rather slender, light brown. Leaves healthy, variable in size, rather thick, inclined to dark green, sometimes rugose, with veins showing indistinctly through the slight pubescence of the lower surface. Flowers open in mid-season, on plan of five or six, nearly fertile.

Fruit ripens with Concord or later and keeps fairly well. Clusters are attractive in general appearance, of good size, rather long, medium to slightly slender, cylindrical to somewhat tapering, usually single-shouldered, compact to medium. Berries medium but variable in size, roundish, purplish-black to black, dull in appearance, covered with heavy blue bloom, inclined to shell in some localities, moderately firm. Skin medium to thin, tough, adheres strongly to pulp, contains a large amount of purplish-red pigment, astringent. Flesh moderately tender, slightly aromatic, spicy, vinous, mildly subacid to agreeably tart, often with a noticeable Concord flavor, about as good as Concord in quality. Seeds separate easily from the pulp, large to above medium, of average length, broad, blunt to medium, slightly notched; raphe obscure; chalaza above center, irregularly circular to slightly oval.

BEAUTY.

(Labrusca, Vinifera, Bourquiniana?)

1. Downing, 1881:165 app. 2. *Ill. Hort. Soc. Rpt.*, 1881:163. 3. *Mo. Hort. Soc. Rpt.*, 1883:43. 4. *Kan. Sta. Bul.*, 14:85. 1890. 5. *Bush. Cat.*, 1894:89. 6. *Tex. Sta. Bul.*, 48:1149, 1153. 1898.

The grape which bears the name Beauty is an Aestivalis hybrid with Labrusca, one of Jacob Rommel's seedlings. It had the honor, according to the *Bushberg Catalogue*,[1] of receiving at the Exposition at Bordeaux, France, in 1880, the praise of having produced "the best American white wine on exhibition." According to the above authority Rommel stopped its propagation and dissemination because of its susceptibility to fungi. The variety is now practically lost to cultivation and was never largely grown in New York.

Beauty is a cross between Delaware and Maxatawney originated by Jacob Rommel of Morrison, Missouri, over thirty years ago. Bush questions the parentage as given by Rommel and thinks it more likely Catawba and Maxatawney. Rommel's Beauty should not be confused with the Beauty

[1] *Bush. Cat.*, 1894:89.

of Minnesota, a grape from the State for which it was named, which has been discarded because of poor quality.

Vine fairly vigorous, usually healthy and hardy, produces medium to good crops. Canes long to medium, numerous, dark reddish-brown often with a strong ashy-gray tinge, surface covered with slight blue bloom. Leaves medium to rather large, dark green; lower surface covered with considerable pubescence. Stamens upright. Fruit ripens between Delaware and Catawba, keeps and ships well. Clusters intermediate in size, strongly tapering, often not shouldered, rather compact. Berries small to medium roundish to slightly oval, dull dark red somewhat darker than Catawba, covered with a large amount of dark lilac bloom, persistent, firm. Flesh tender, slightly foxy, sweet, good to very good in quality. Chalaza very distinct.

BELL.

(Riparia, Labrusca, Bourquiniana, Vinifera.)

1. *Rural N. Y.*, 45:733. 1886. *fig.* 2. *Mich. Pom. Soc. Rpt.*, 1893:118. 3. *Ill. Sta. Bul.*, 28:263. 1893. 4. *Va. Sta. Bul.*, 30:106. 1893. 5. *Ga. Sta. Bul.*, 28:290. 1895. 6. *Tenn. Sta. Bul.*, Vol. 9:168. 1896. 7. *Kan. Sta. Bul.*, 73:181, 182. 1897. 8. *Tex. Sta. Bul.*, 48:1149, 1153. 1898. 9. *Va. Sta. Bul.*, 94:142. 1898. 10. *Am. Pom. Soc. Cat.*, 1899:31. 11. *Ga. Sta. Bul.*, 53:40, 52, 53. 1901.

Munson's No. 21 (1, 2, 4). Willie Bell (4, 9).

Bell is still another of Munson's hybrids, its parents being Elvira crossed with Delaware. Its characters are chiefly those of Elvira and in particular it has the Elvira flavor, which is somewhat against it for a table grape. As to its value for wine-making there are no records though it may be assumed that it has the same value for this purpose as the Elvira, which it so greatly resembles in flavor. From its behavior here, this Station does not recommend Bell for New York.

Munson produced Bell in 1881 from seed of Elvira pollinated by Delaware. After having tested it thoroughly the originator disseminated it and continues to offer it in his catalog; proof of its value for some of the grape regions.

Vine a strong grower, hardy, usually produces full crops although a shy bearer in some localities. Leaves vigorous, healthy, medium to very large. Flowers open before mid-season, nearly fertile; stamens upright. Fruit ripens in mid-season or later, keeps well. Clusters intermediate in size and length, frequently shouldered, compact to medium. Berries medium to small, roundish, dull green sometimes with yellow tinge, covered with rather heavy gray bloom, persistent. Skin thin, very tender, adheres considerably to the pulp. Flesh moderately juicy and tender, sweetish at skin to tart at center, ranks about the same as Elvira in quality.

BERCKMANS.

(Riparia, Labrusca, Bourquiniana.)

1. *Am. Pom. Soc. Rpt.*, 1871:114. 2. *Ib.*, 1877:43. 3. *Gar. Mon.*, 23:308. 1881. 4. *Bush. Cat.*, 1883:75. 5. *Am. Pom. Soc. Cat.*, 1889:24. 6. *Ala. Sta. Bul.*, 10:8. 1890. 7. *Ark. Sta. Bul.*, 39:27. 1896. 8. *Rural N. Y.*, 56:823. 1897. 9. *N. Y. Sta. An. Rpt.*, 17:526, 545, 547, 553. 1898. 10. *Tex. Sta. Bul.*, 48:1149, 1153. 1898. 11. *Mo. Sta. Bul.*, 46:37, 43, 44, 46, 48. 1899. 12. *Kan. Sta. Bul.*, 110:245. 1902.

Delaware and Clinton No. 1 (1).

In Berckmans, generally speaking, we have the fruit of Delaware on the vine of Clinton. Berckmans was disseminated nearly forty years ago and though the fruit is seemingly better adapted for the market than Delaware, and the vine much more vigorous, as hardy and as productive as its better known parent, yet the variety is seldom grown other than as an amateur grape. The berry and bunch resemble Delaware in shape; the fruit is of the same color; bunch and berry are larger, but the vine is not quite as productive; the flesh is firmer, making it a better shipper and it keeps better; the quality is not so good, the flesh lacking tenderness, sweetness and richness in comparison with Delaware. The vine of Berckmans is much more vigorous and is less subject to mildew than that of Delaware, but there are many reports that it suffers from leaf-hoppers and the rose bug, insects which seem inordinately fond of its foliage. The vine characters are not as good as those of Clinton. The variety seems illy adapted to some soils and in particular does not color well if not suited in this respect. In spite of its many good qualities, popular verdict has decreed that Berckmans is but an amateur's grape. The name commemorates the viticultural labors of P. J. Berckmans, a contemporary and friend of Dr. A. P. Wylie of Chester, South Carolina, who originated the variety and christened it Berckmans.

Berckmans was produced by Dr. A. P. Wylie[1] of Chester, South Caro-

[1] Dr. A. P. Wylie was a southern hybridizer. His life was one of exceptionally varied usefulness. Besides being a physician he worked with many different plants, producing new varieties of cotton, peach, nectarine, magnolia and other species. His hybrids were produced chiefly during the sixties and early seventies. His method of testing hybrid grapes was unique; as soon as the fruit from the cross-fertilized blossoms ripened, the seeds were planted and the seedlings forced the first winter in a hothouse. In the spring it was planted by the side of a mature vine outside and the seedling grafted by inarching on the established vine. In this manner, his son writes us,

BERCKMANS

lina, from Delaware seed fertilized by Clinton. The seed was planted in 1868 and the plant bore its first fruit in 1870, the variety being introduced some years later.

Vine similar to Clinton in growth and foliage, vigorous to very vigorous, hardy, produces average to good crops. Canes long, numerous, rather slender, light to dark brown; nodes prominent, flattened; internodes short; diaphragm below medium thickness; pith medium to above in size; shoots not pubescent; tendrils intermittent, long, bifid.

Leaf-buds intermediate in size, short, of average thickness, conical to nearly obtuse, open very early. Young leaves decidedly pale green with faintest trace of carmine, prevailing color green on both sides. Leaves medium to small, thin; upper surface light green, smooth; lower surface pale green, not pubescent; veins inconspicuous; lobes vary from none to three, terminal lobe acute; petiolar sinus medium to shallow, wide; basal sinus usually lacking; lateral sinus shallow; teeth intermediate in depth and width. Flowers open rather early, fertile; stamens upright.

Fruit ripens with Delaware and keeps unusually well. Clusters attractive, much like Delaware in shape and size but slightly longer and more often shouldered, compact to medium, averaging slightly looser than either parent; peduncle rather short, slender; pedicel longish, slender, covered with but few warts; brush short, light green. Berries intermediate in size, slightly larger than Delaware, roundish to slightly oval, resemble Delaware in color but somewhat darker when well ripened, covered with lilac bloom, persistent, of average firmness. Skin thin, somewhat tough, slightly adhering to pulp, contains no pigment, nearly astringent. Flesh pale yellowish-green, translucent, fine-grained, tender, inclined to melting, vinous, sweet to agreeably tart, sprightly, very good in quality. Seeds separate easily from the pulp, one to four, average three, slightly below medium in size, rather broad and blunt, brownish; raphe obscure; chalaza of average size, slightly above center, irregularly oval, distinct.

BERTRAND.

(Bourquiniana.)

1. *Am. Pom. Soc. Rpt.*, **1885**:17. 2. *Rural N. Y.*, 45:653, 660. 1886. *fig.* 3. *Gar. Mon.*, 28:305. 1886. *fig.* 4. *Bush. Cat.*, **1894**:90. *fig.* 5. *Texas Farm and Ranch*, Feb. 8, **1896**:11. 6. *Ala. Sta. Bul.*, 110:78. 1900.

Blue Seedling (1, 3). *Blue Seedling* (4, 5).

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he frequently secured fruit the second summer. In 1873 he suffered the irreparable misfortune of losing his residence by fire. This destroyed all of his seeds and also his seedlings, which were in an adjacent hothouse. The number of Dr. Wylie's grape seedlings cannot be accurately told as many of them were never disseminated. Of his better known sorts there are Berckmans, Dr. Wylie, Mrs. McClure, and Peter Wylie, the best known of which is the first. Dr. Wylie was the first man to hybridize the *Vitis rotundifolia* with other species of grapes. Unfortunately these hybrids appear to have been lost to cultivation. He died at his home in Chester, South Carolina, in 1877.

Bertrand is a southern variety, almost without question an offspring of Herbemont, and so far as can be judged from the descriptions of others, we not having seen the fruit, not nearly equal to its parent. The variety is hardy only as far north as Maryland and even in that State must be planted in sheltered situations.

Judge J. B. Jones, Herndon, Burke County, Georgia, found Bertrand as an accidental seedling, which had germinated in the spring of 1878. Judge Jones gives the species as being Cordifolia but Berckmans says it looks like an Aestivalis; it is now generally classed in the Bourquiniana group. The following description of this variety is compiled from various sources:

Vine vigorous. Cluster above medium to rather large, usually conical, most often shouldered, moderately compact; peduncle long. Berries below medium in size, round, black with blue bloom; flesh melting, juicy, very high flavored. Skin thin, tough. Ripens late. Seeds few. Very productive in the South. Of value only for wine.

BLACK DEFIANCE.

(Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, 1868:10. (No name given.) 2. *Bush. Cat.*, 1883:75. 3. *Okla. Sta. Bul.*, 14:6. 1895. 4. Husmann, 1895:31. 5. *Mo. Sta. Bul.*, 46:37, 43, 76. 1899. 6. *Ga. Sta. Bul.*, 53:41. 1901.

Underhill's 8–8 *Hybrid* (2).

Black Defiance is one of Stephen Underhill's Vinifera-Labrusca hybrids, at one time quite popular as a late table grape, but now superseded by thriftier varieties. It ripens too late to be of much value in New York. When phylloxera had driven French grape-growers to look to America for varieties of grapes, and before grafting on resistant stocks was practiced in that country, Black Defiance was looked upon with much favor in France where it succeeded very well. The fruit is distinguished by the size, lustrous blackness and handsome bloom of the berry. It is now rarely cultivated in New York having been replaced by varieties more certain to mature in this State.

Stephen Underhill of Croton-on-Hudson, New York, produced Black Defiance from seed of Concord fertilized by Black Prince. It first fruited in 1866. The variety was introduced without the originator's consent.

Black Defiance is described as follows:[1]

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[1] *Tex. Sta. Bul.*, 48:1153. 1898.

BLACK EAGLE

"Growth medium, shoots smooth; leaves large, more or less three-lobed, with uneven margin; bunches large, oblong with large base, frequently branched; berries black, decidedly acid, pulp rather firm, ripe July 22nd; defoliated on October 6, 1896. Not good for table use."

BLACK EAGLE.

(Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, 1868:10. (No name given.) 2. *Ohio Hort. Soc. Rpt.*, 1875–6:22. 3. *Ib.*, 1876–7:32. 4. *Bush. Cat.*, 1883:75. *fig.* 5. *N. Y. Sta. An. Rpt.*, 12:618. 1893. 6. *Tenn. Sta. Bul.*, Vol. 9:168. 1896. 7. *N. Y. Sta. An. Rpt.*, 17:527, 548, 553, 559. 1898. 8. *Tex. Sta. Bul.*, 48:1149, 1153. 1898. 9. *Mo. Sta. Bul.*, 46:37, 42, 44, 46, 48, 76. 1899. 10. *N. Y. Sta. An. Rpt.*, 18:370, 386, 396. 1899. 11. *Kan. Sta. Bul.*, 110:240. 1902.

Underhill's 8–12 (4).

Black Eagle is a full brother of Black Defiance which it much resembles but surpasses for New York because it is fully three weeks earlier in ripening. On our grounds its season is about with Concord. The quality of Black Eagle is of the best, but the vine lacks in vigor, hardiness and productiveness and the fruit is susceptible to black-rot. As the color-plate shows, bunch and berry are large and attractive; bunches weighing nearly two pounds have been grown for exhibition purposes and probably there are few if any showier hybrid grapes than this when at its best. The leaf is that of *Vitis vinifera*, deeply lobed, of a beautiful green, and with firm texture, making with thrifty vines one of the most attractive grape plants to be found in our vineyards. The variety is self-sterile. Black Eagle has wholly failed as a commercial variety and its several weaknesses will prevent amateurs from growing it largely, yet it is far too good a grape to give up altogether and lovers of grapes should keep it in cultivation.

The variety originated with Stephen W. Underhill, Croton-on-Hudson, New York, from seed of Concord pollinated by Black Prince. It first fruited in 1866. The variety was sent out by Underhill for testing and was introduced without the originator's consent.

Vine medium to vigorous, not always hardy, not productive. Canes rather rough, medium to long, of average number, thick, approaching dark reddish-brown, covered with slight blue bloom; nodes strongly enlarged, slightly flattened; internodes above medium length; diaphragm thick; pith of average size; shoots pubescent; tendrils continuous, long, bifid to trifid.

Leaf-buds intermediate in size, short, rather thick, pointed to conical, open very late. Young leaves tinged with carmine on the under surface and along margin of upper

surface making the prevailing color a light rose-carmine. Leaves of average size, medium to thick; upper surface dark green, slightly glossy, smooth to rugose; lower surface pale grayish-green, somewhat pubescent; veins not distinct; lobes five in number, terminal lobe acute; petiolar sinus deep to narrow, often closed and overlapping; basal sinus very wide and deep; lateral sinus wide at bottom narrowing towards top, deep; teeth intermediate in depth and width. Flowers open in mid-season or later, fully self-sterile; stamens reflexed.

Fruit ripens in mid-season, keeps well if picked before overripe. Clusters of large to average size, rather long, tapering, varying from single- to double-shouldered, loose to compact; peduncle longish, rather thick; pedicel long to medium, somewhat slender, covered with very few warts, enlarged at point of attachment to fruit; brush short, pale green. Berries variable in size averaging large, slightly oval, black, glossy, covered with a moderate amount of blue bloom, do not shatter, somewhat soft. Skin thin, rather tender, adheres strongly to pulp, with slight amount of wine-colored pigment, not astringent. Flesh pale green, translucent, somewhat tender, vinous, not foxy, sweet at skin to agreeably tart at center, quality good. Seeds separate easily, one to four, average two or three, rather large and broad, nearly long.

BLACK HAMBURG.

(Vinifera.)

1. Speechly, **1791**:11,170. 2. *London Hort. Soc. Cat.*, **1830**:75. 3. Hoare, **1840**:142. 4. *Mag. Hort.*, **9**:245. 1843. 5. *Ib.*, **13**:43. 1847. 6. *Am. Pom. Soc. Cat.*, **1852**:54. (For culture under glass.) 7. *Horticulturist*, **15**:125. 1860. 8. *Mag. Hort.*, **26**:110. 1860. 9. *Can. Hort.*, **11**:59. 1888.

Admiral (4). *Black Gibralter* (4). *Black Hamburgh* (2). *Black Portugal* of some (4). *Black Teneriffe* (4). *Blue Trollinger* (4). *Bocksaugen* (4). *Bommerer* (4). *Brown Hamburgh* (4). *Dutch Hamburgh* (4). *Fleish Traube* (4). *Frakenthaler* (4). *Frankendale* (4). *Frankenthaler gros noir* (4). *Gelbholziger Trollinger* (4). *Gibralter* (4). *Hampton Court Vine* (4, 8). *Hudler* (4). *Languedoc* (4). *Lugiana nera* (4). *Malvasier* of some (4). *Mohrendutte* (4). *Pale Wooded Trollinger* (4). *Purple Hamburgh* (4). *Red Hamburgh* (4, of some 2). *Richmond Villa Hamburgh* (8). *Salisbury Violet* (4). *Schwarzeblauer Trollinger* (4). *Schwarzer Gutedel* of some (4). *Schwarzwelscher* (4). *Troller* (4). *Trollinger* (4). *Valentines* (4). *Victoria* (4). *Warner's* (2, 4). WARNER'S BLACK HAMBURGH (2). *Warner's Black Hamburgh* (4). *Warner's Hamburgh* (8). *Weissholziger Trollinger* (4). *Welscher* (4).

Black Hamburg is a variety of *Vitis vinifera*, impossible to grow out of doors in eastern America, but illustrated and described here because it is one of the parents of many hybrids with American species and because it represents, in fruit characters at least, about all that is desirable in a good grape. Since it is a standard of excellence which American breeders of table grapes have long sought to attain, we may name its points of superiority over the table grapes now grown in our vineyards. 1st. Bunch and

BLACK HAMBURG (Reduced Size)

berry are large, well formed, and uniform. 2nd. The fruits have a higher sugar and solid content than most American grapes and keep better, ship better, make better wine and will make raisins. 3d. The flavor, to most palates, is richer, more delicate, and lacks the acidity of some American grapes and the foxiness of others. 4th. The pulp and skin of Black Hamburg are more tender than the varieties of the species of this country and the seeds are readily separated from the pulp. 5th. The berries do not shell from the stem readily. 6th. The vines are more compact in habit, make a shorter and stouter annual growth, and hence require less pruning and training. 7th. The fruit is borne in greater quantity, vine for vine or acre for acre. Added to the above qualities which make it desirable as a parent when crosses are made between the grapes of this country and *Vitis vinifera*, are comparative hardiness among its kind, a short seasonal cycle of vegetation giving early maturity to fruit, ability to stand more hardships than most of its species, and especially ability to mature its fruit with as small amount of solar heat as any of its species. Its weaknesses when planted out of doors in eastern America are those of its species, which wholly prevent its successful cultivation in the vineyards of this region and make it of interest and value only in breeding and as an ideal toward which to breed.

The origin of Black Hamburg is apparently unknown. It was sent from Hamburg, Germany, to England sometime in the early part of the eighteenth century and it was in the latter country that it was given the several variations of the name Hamburg. In the north of Europe it is known as Frankendale or Frankenthal. Black Hamburg is grown in Europe chiefly as a forcing grape. It is doubtful if all the synonyms refer to one seed variety, but if not the same, they are so similar as to be difficult if not impossible to distinguish from each other.

Vine vigorous, tender, productive. Canes long, numerous, rather thick to medium, light brown but darker at nodes, covered with faint pubescence; nodes enlarged, slightly flattened; internodes short to medium; diaphragm thick; pith large; shoots slightly pubescent; tendrils intermittent, frequently several nodes with no tendrils, long, bifid to trifid, dehisce early.

Leaf-buds large to medium, rather long, somewhat thick, conical to obtuse. Leaves good size, thin; upper surface light green, rather dull, of average smoothness; lower surface slightly lighter than upper surface, with small amount of pubescence, hairy;

veins moderately distinct; lobes vary from none to five, terminal lobe nearly acute; petiolar sinus often strongly urn-shaped, of average depth, nearly narrow, sometimes closed and overlapping; basal sinus shallow to narrow; lateral sinus rather deep to narrow, often notched; teeth very irregular in depth and width.

Fruit ripens early in October, keeps well. Clusters large, long to medium, rather broad, cylindrical to tapering, inclined to irregular, usually single-shouldered, nearly compact; peduncle medium to short, somewhat thick; pedicel long, slender, covered with small, numerous, prominent warts; brush short, thick, tinged with red. Berries rather large, oval to nearly roundish, dark purple to nearly black, slightly glossy, covered with faint blue or lilac bloom, do not drop from pedicel, moderate in firmness. Skin thin, tender, adheres to the pulp, contains no pigment, not astringent. Flesh pale green, tender, fine-grained, vinous, sprightly, rather sweet and refreshing, very good to best. Seeds separate easily, one to four averaging two or three, above medium size, long, rather narrow, sharply pointed, brownish; raphe obscure; chalaza intermediate in size, decidedly above center, distinct, circular to oval.

BLACK HAWK.

(Labrusca.)

1. *U. S. D. A. Rpt.*, 1865:197. 2. Fuller, 1867:236. 3. *Gar. Mon.*, 9:147, 214. 1867. 4. *Ill. Hort. Soc. Rpt.*, 1868:175. 5. Downing, 1869:531. 6. *Grape Cult.*, 1:14, 15. 1869. 7. *Mich. Pom. Soc. Rpt.*, 1878:482. 8. *Bush. Cat.*, 1883:75. 9. *Mo. Sta. Bul.*, 46:37, 42, 44, 46. 1899.

Miller's No. 4 (1, 6).

Black Hawk is a seedling of Concord which it greatly resembles but all in all does not nearly equal. It is chiefly remarkable because of its very dark green foliage which at a little distance seems almost black. It is rarely or almost never cultivated in New York.

Samuel Miller of Calmdale, Lebanon County, Pennsylvania, in the fifties produced Black Hawk from Concord seed sent to him by E. W. Bull. The stock was bought and the variety introduced by a Mr. Knox of Pittsburg.

The following description was compiled from various sources:

Vine hardy, resembles Concord except for foliage being much darker. Bunch medium to sometimes large; berry medium to above, nearly round, black, of tender flesh but hardly good in quality; sometimes shatters. Ripens with Concord or slightly before. Self-sterile. Rather late in blooming.

BLACK IMPERIAL.

(Labrusca, Bourquiniana, Vinifera.)

1. *Mo. Hort. Soc. Rpt.*, 1891:127. 2. *Bush. Cat.*, 1894:93. 3. *Ga. Sta. Bul.*, 53:41. 1901.

Black Imperial is one of Dr. J. Stayman's grapes. It has high quality and is handsome in appearance but is so susceptible to fungi as to be almost worthless and has now passed from cultivation.

Dr. J. Stayman of Leavenworth, Kansas, produced Black Imperial from seed of Dutchess some time in the eighties. The variety was first called Black's Imperial. There was another variety preceding this which is mentioned by Prince[1] and Fuller[2] in the sixties by the name of Black Imperial.

The following description is taken largely from that of the originator:

Vine usually moderately vigorous and productive. Cluster large, shouldered, compact. Berries of medium size, black, tender, juicy; flavor sweet, vinous; quality good to very good. Flowers self-fertile. Quite subject to mildew and black-rot.

BLACK PEARL.

(Riparia, Labrusca?)

1. *Mich. Pom. Soc. Rpt.*, 1875:459. 2. *Ohio Hort. Soc. Rpt.*, 1876–7:90. 3. *Ib.*, 1882–3:49. 4. *Bush. Cat.*, 1883:75. 5. *Mo. Hort. Soc. Rpt.*, 1884:215. 6. *Mo. Sta. Bul.*, 46:37, 43, 45, 46. 1899.
SCHRAIDT'S SEEDLING (1, 2). *Schraidt's Seedling* (3, 4).

Viticulturists agree that Black Pearl is but an improved Clinton, notwithstanding the originator's statement that it came from seed of Delaware. Unfortunately the vine is not in the Station vineyard and our estimate of its vine characters is taken from the descriptions of others. According to the *Bushberg Catalogue*,[3] "The vine is a vigorous healthy grower similar in appearance of growth and foliage to Elvira and Noah." The bunches and berries, as they have been sent to this Station, are larger than Clinton and of better quality though of small value as a table fruit. It seems well agreed among wine-makers that Black Pearl makes an exceptionally good red wine equalling or surpassing any other of our northern varieties for this purpose. Without doubt, from the many testimonials as to its value for wine-making, it can be highly recommended for this pur-

[1] *Mag. Hort.*, 1863:67.

[2] Fuller, 1867:237.

[3] *Bush. Cat.*, 1883:75.

pose and as a good starting point from which to breed wine grapes. So far, though grown for more than thirty years, its culture is confined to the islands in Lake Erie devoted to grape-growing and the variety can hardly be said to be known in New York. It is probably too late for most parts of New York as it ripens with Catawba.

Black Pearl was originated by Casper Schraidt of Put-in-bay, Ohio, over thirty years ago. The originator states that it is a seedling of Delaware but this has generally been discredited, as the vine is evidently of the Riparia type. Bush says it is probably a seedling of Clinton or Taylor.

Vine a strong grower, does not winter-kill, usually a good yielder, susceptible to attacks of mildew. Canes are long, numerous, and of average thickness. Leaves are intermediate in size. Flowers open in mid-season or before, sterile or nearly so; stamens reflexed.

Fruit ripens with Catawba, keeps fairly well. Clusters small to medium, larger than Clinton, medium to rather slender, tapering to cylindrical, often single-shouldered, intermediate to compact. Berries below medium to very small, roundish, oblate or frequently compressed on account of compactness of cluster, black, glossy, covered with a moderate amount of blue bloom, persistent, firm. Skin thin, tender, adheres strongly to the pulp, contains an unusually large amount of purplish-red pigment, astringent. Flesh moderately juicy, usually with a decided red tinge, nearly tender, slightly spicy, tart, medium to below in flavor and quality. Seeds, which adhere but little to the pulp, are medium to below in size, short to medium, broad, slightly notched, blunt, dark brown; raphe obscure; chalaza central, oval to circular, distinct.

BRANT.

(Riparia, Labrusca, Vinifera.)

1. Downing, 1869:532. 2. *Am. Jour. Hort.*, 6:91. 1869. *fig.* 3. *Mich. Hort. Soc. Rpt.*, 1872:553. 4. *Bush. Cat.*, 1883:77. *fig.* 5. *Kan. Sta. Bul.*, 44:119. 1893. 6. *Tex. Sta. Bul.*, 48:1149, 1154. 1898. *Arnold's No. 8.* (1, 2, 4).

Brant and Canada are full brothers and so near alike that the two are often confounded with each other. Neither has ever become popular in North America because of their susceptibility to fungi. As Riparia and Vinifera hybrids, the best of Arnold's seedlings from crosses of these two species, they are of interest and of possible value in grape-breeding. Since Brant and Canada are so nearly alike a discussion of one will suffice for both and this is reserved for Canada, the better known and more valuable of the two varieties.

Charles Arnold of Paris, Canada, produced this variety sometime in

the sixties. It is a seedling of Clinton pollinated by Black St. Peters. The following description of it is taken from Downing's *Fruits and Fruit-Trees of America:*[1]

"Vine strong, healthy grower. Foliage of a dark reddish green, deeply lobed. Smooth on both sides. Bunch and berry medium, black. Flesh free from pulp, very juicy, sweet, and, when perfectly ripe, rich and aromatic. Ripens early."

BRIGHTON.

(Labrusca, Vinifera.)

1. *Mich. Hort. Soc. Rpt.*, **1872**:548. 2. *Gar. Mon.*, **16**:344. 1874. 3. *Am. Pom. Soc. Cat.*, **1881**:24. 4. Downing, **1881**:165 app. 5. *Bush. Cat.*, **1883**:78. *fig.* 6. *Rural N. Y.*, **45**:622. 1886. 7. *Ill. Sta. Bul.*, **28**:258. 1893. 8. *N. Y. Sta. An. Rpt.*, **17**:527, 540, 543, 545, 546, 548, 549, 552, 553, 559. 1898. 9. *Ib.*, **18**:367, 371, 386, 396. 1899. 10. *Mo. Sta. Bul.*, **46**:37, 42, 44, 45, 48, 54. 1899. 11. *Mich. Sta. Bul.*, **169**:164. 1899. 12. *W. N. Y. Hort. Soc. Rpt.*, **1899**:91. 13. *Mo. Hort. Soc. Rpt.*, **1900**:364. 14. *Can. Hort.*, **27**:345, 392. 1904.

Trask (12).

Brighton is one of the few Labrusca-Vinifera hybrids which have attained prominence in commercial vineyards. It has the distinction, too, of being one of the first, if not the first, secondary or attenuated hybrid of Labrusca with Vinifera, *i. e.*, the offspring of a hybrid crossed with one of the original parents or with a variety of the same species. The parents of Brighton were Diana Hamburg, a hybrid of Vinifera crossed with Labrusca, and Concord, a pure-bred Labrusca. As we have seen, the first or primary hybrids of Vinifera with Labrusca have given grapes of high quality, but lacking in vigor, in resistance to fungi and phylloxera, and for most part infertile in bloom. The secondary hybrids have not shown the weaknesses of the primary hybrids in nearly so marked a degree but have given, in many instances, as in Brighton, Diamond and probably Delaware, varieties of nearly as high quality. It is now generally recognized by viticulturists that the secondary hybrids with Vinifera promise much more than do the primary ones and it is no mean distinction that Brighton has of being the first secondary hybrid brought about by the hand of man.

Brighton ranks as one of the leading amateur grapes in New York and is among the ten or twelve chief commercial sorts of the State. Its good points are: High quality, handsome appearance, certainty of ripening, being earlier than Concord, vigorous growth, productiveness, adaptability

[1] Downing, **1869**:532.

to various soils, and, for a hybrid, ability to withstand fungi. It is thus seen that the infusion of foreign blood has given the fruit of Brighton some of the excellencies of *Vitis vinifera* while the preponderance of *Vitis labrusca* blood has preserved the vigor and hardiness of the native species. Brighton has two serious defects which no doubt have kept it from taking higher rank as a commercial variety: It deteriorates in quality very quickly after maturity so that it cannot be kept for more than a few days at its best, hence cannot be well shipped to distant markets; and it is self-sterile to a more marked degree than any other of our commonly grown grapes. To have it at its best the fruit should be thinned.

This grape is a signal example of a variety resulting from careful and skilful work in grape-breeding. Its originator, Jacob Moore,[1] possessed of a high degree of intelligence and an unusually keen sense of the latent possibilities in plants, with unwearied perseverance spent years in the attempt to produce grapes combining the good characters of the Old and the New World grapes. As a result of his zeal and patience we have Brighton and Diamond, the most valuable grapes of their class. Jacob Moore's demonstration of the value of the secondary hybrid, and these two grapes, must serve to commemorate a life spent in self denial, imposed poverty and comparative obscurity that horticulture might be enriched.

Brighton is a seedling of Diana Hamburg pollinated by Concord, raised by the late Jacob Moore at Brighton, New York. The original vine fruited for the first time in 1870 and fruit was first exhibited at the meeting of the New York Horticultural Society in 1872.

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[1] Jacob Moore was born in Brighton, New York, in 1835. He early engaged in the nursery business and about 1860 began to experiment in hybridizing grapes, his first production of note being Diana Hamburg which proved too tender to be of value in New York. In 1873 he sold the Brighton to its introducer, the grape having come from a union of Diana Hamburg and Concord. In 1882 Moore's third grape of note, the Diamond, was introduced, its parents being Concord, fertilized by Iona. One other grape completes his list of varieties of this fruit — the Geneva, a Vinifera-Labrusca hybrid from seed planted in the spring of 1874. Beside these grapes, Moore was the originator of the Ruby, Red Cross and Diploma currants and the Bar-seckel pear. Jacob Moore died in January, 1908, having devoted a life to the improvement of fruits and having spent a patrimony of no small amount and all of his earnings in carrying on experiments in horticulture. It saddens one to know that after having devoted a half century to the enrichment of agriculture, poor Moore should have passed his last years in comparative poverty, and that they were embittered with the thought that, unlike the inventor, the producer of new fruits can in no way protect the products of his originality, even though they added millions to the wealth of the country as have his fruits.

BRIGHTON

Vine vigorous and hardy, producing average to good crops, often subject to mildew. Canes long, numerous, thick, rather light brown; nodes slightly enlarged, usually flattened; internodes long to medium; diaphragm thick; pith nearly large; shoots glabrous, slightly pubescent; tendrils continuous, long, bifid.

Leaf-buds of average size, short, stout, conical to pointed, sometimes slightly compressed, open moderately early. Young leaves lightly tinged with rose-carmine on lower surface, strongly tinged along margin of upper surface. Leaves medium to large, thick; upper surface dark green, dull, moderately smooth; lower surface pale green, slightly pubescent; veins not distinct; lobes three when present, terminal lobe acute to acuminate; petiolar sinus nearly intermediate in depth and width; lateral sinus shallow to medium in depth and width; teeth of average depth, narrow. Flowers open somewhat late, sometimes on plan of six, sterile; stamens reflexed.

Fruit ripens somewhat unevenly about mid-season, keeps fairly well for a short time but deteriorates rapidly after ripening. Clusters very large to medium, usually long, broadish, tapering, often heavily shouldered, loose to compact; peduncle quite long; pedicel of average length, somewhat thick, covered with few indistinct warts, broad at point of attachment to berry; brush pale green with brown tinge, thick, short. Berries irregular, medium to rather large in size, roundish to slightly oval, light and dark red, somewhat glossy, covered with dark lilac bloom, handsome, persistent, not firm. Skin thickish, very tender, adheres considerably to the pulp, contains no pigment, astringent. Flesh greenish, rather transparent, tender, slightly stringy, melting, aromatic, vinous, sweet or agreeably tart to center of berry, very good in quality. Seeds separate easily, number one to five, average three or four, above mean size, rather broad and sharply pointed, light brown with yellow tinge; raphe shows as a narrow obscure groove; chalaza large, above center, irregularly circular, distinct.

BRILLIANT.

(Labrusca, Vinifera, Bourquiniana.)

1. *An. Hort.*, 1889:101. 2. *Rural N. Y.*, 49:602. 1890. *fig.* 3. *Am. Pom. Soc. Rpt.*, 1891:151, 159. 4. *Am. Pom. Soc. Cat.*, 1891:32. 5. *Kan. Sta. Bul.*, 28:162. 1891. 6. *Ill. Sta. Bul.*, 28:259. 1893. 7. *N. Y. Sta. An. Rpt.*, 12:618. 1893. 8. *Bush. Cat.*, 1894:96. *fig.* 9. Husmann, 1895:124. 10. *Can. Hort.*, 18:3, 4, 58. 1895. *fig.* 11. *Ga. Sta. Bul.*, 28:290. 1895. 12. *Tenn. Sta. Bul.*, Vol. 9:170, 171, *fig.*, 195. 1896. 13. *Kan. Sta. Bul.*, 73:183. 1897. 14. *Rural N. Y.*, 58:22. 1899. 15. *Mo .Sta. Bul.*, 46:43, 48. 1899. 16. *N. Y. Sta. An. Rpt.*, 18:396. 1899. 17. *Tex. Sta. Bul.*, 56:275. 1900.

In Brilliant, one of Munson's grapes, from Lindley crossed with Delaware, we have a fine red grape in which the characters of the two parents are so nearly equally combined that it cannot be said which it most resembles. In cluster and size of berry, Brilliant resembles Lindley; in color

and quality of fruit it is about the same as Delaware, differing from it chiefly in having more astringency in the skin and therefore not quite equal to Delaware as a table grape. The vine is strong and hardy; season about with Delaware. Brilliant does not crack or shell and therefore ships well, and has very good keeping qualities, especially on the vine, where it will often hang for weeks. The defects which have kept it from becoming one of the standard commercial sorts in New York are: Marked susceptibility to fungi but not more susceptible than Delaware; variable in size of cluster; uneven in ripening; and lack of productiveness. Brilliant is well known by amateur grape-growers in New York and is grown somewhat for the market. All in all it is probably the best known and most widely grown of Munson's varieties in this State. In favorable situations, this variety may always be expected to please the amateur, and the commercial grower will often find it a profitable sort.

The seed which produced Brilliant was planted by Munson in 1883 and the variety was introduced by him in 1887. It has been widely tested by experimenters and grape-growers and is highly spoken of, whether in the East, West, North or South.

Vine variable in growth averaging vigorous, usually hardy, not always productive. Canes long, numerous, thick, darkish-brown; nodes enlarged, usually flattened; internodes long to medium; diaphragm thick; pith large, shoots pubescent; tendrils intermittent, long, bifid.

Leaf-buds somewhat large, short, thick, obtuse to conical, open late. Young leaves heavily tinged on both sides with mahogany-red changing to light carmine. Leaves medium to large, thick; upper surface dark green, dull, rugose; lower surface grayish-green, downy; veins well defined; entire or obscurely three-lobed with terminal lobe blunt to acute; petiolar sinus deep, narrow, V-shaped; basal and lateral sinuses obscure and shallow when present; teeth intermediate in depth and width. Flowers open medium late, fertile; stamens upright.

Fruit ripens unevenly, in season about with Delaware, keeps a long time. Clusters average larger than Delaware, intermediate in length and breadth, often blunt, cylindrical to somewhat conical, usually slightly shouldered, medium to compact; peduncle rather thick; pedicel medium to short, thick, covered with few small warts, wide at point of attachment to berry; brush short, thick, pale green with reddish-brown tinge. Berries average larger than Delaware, roundish to very slightly oval, attractive dark red, not so brilliant as Delaware but more so than Brighton, rather glossy, covered with abundant lilac bloom, adhere strongly to pedicel, firm. Skin rather thin and tough, adheres con-

BRILLIANT

siderably to pulp, contains no pigment, slightly astringent. Flesh pale green, rather transparent, juicy, slightly stringy, inclined to tenderness when fully ripe, fine-grained, vinous, sweetish at skin but tart next the seeds, good but not equal to Delaware. Seeds cling somewhat to pulp, one to four in number, average three, rather large and broad, slightly elongated, plump, light brown; raphe obscure; chalaza large, slightly above center, irregularly circular to slightly oval, distinct.

BROWN.

(Labrusca, Vinifera?)

1. *N. Y. Sta. An. Rpt.*, 12:619. 1893. 2. *Bush. Cat.*, 1894:96. 3. *N. Y. Sta. An. Rpt.*, 14:277. 1895. 4. *Ib.*, 17:527, 548, 554. 1898. 5. *Am. Pom. Soc. Rpt.*, 1899:90. 6. *Rural N. Y.*, 59:722. 1900. 7. *Ib.*, 65:914. 1906. 8. *Ib.*, 65:937. 1906. 9. *Ib.*, 66:24. 1907.

Brown's Early (7, 9). Brown Seedling (5, 6, 8).

Wm. B. Brown of Newburgh gives the history of the grape bearing his name as follows:[1] "Brown's seedling came up in my yard at Newburgh, New York, about fifteen years ago [this statement was made in 1899] near an Isabella vine. There was not and never had been any other vine in the yard at that time." The statement is further made that Charles Downing examined the vine several times and said "there was no doubt but that it was a seedling of the Isabella." Brown was exhibited at the New York State Fair in 1892 and was given a first prize. It was again exhibited at the World's Columbian Exposition in 1893 and was awarded a diploma and honorable mention. The originator states that the variety "has been exhibited in at least twenty-five fairs and has always received first prize." Since 1892 Brown has been several times described with favorable mention in the horticultural press. This variety was distributed in 1907 to the subscribers of the *Rural New Yorker* as Brown's Early. In spite of the encomiums of fairs and newspapers during the past fifteen or twenty years, Brown has not received favorable recognition from the grape-growers of New York. As the variety grows on the Station grounds the quality is only good, not high, and the berries shatter badly.

Vine vigorous to medium, hardy, very productive. Canes medium to short, intermediate in number, medium to slender, moderately dark brown. Leaves of average size and thickness, healthy, rather light green, slightly glossy; veins well defined, dis-

[1] Advertising circular sent out by Wm. B. Brown in 1899.

tinctly showing through the thick bronze pubescence of the lower surface Flowers open medium early, nearly fertile; stamens upright. Tendrils continuous; diaphragm below medium to thin.

Fruit ripens about with Hartford or a little earlier, appears to keep fairly well, inclined to shatter. Clusters variable in size, averaging medium to small, of mean length, slender to medium, cylindrical to slightly tapering, usually single-shouldered, loose to medium in compactness. Berries intermediate in size, roundish to slightly oval, black, covered with rather thick blue bloom, inclined to shatter from cluster soon after ripening, of average firmness. Skin intermediate in thickness and toughness, adheres slightly to the pulp, contains a small amount of wine-colored pigment, astringent. Flesh juicy, rather tough, fine-grained, foxy, mild next the skin to slightly tart at center, good in quality but not equal to the best varieties. Seeds intermediate in size, medium to short, rather blunt, light brown; raphe buried in a shallow groove; chalaza small, central to slightly above center, circular, moderately distinct.

CAMPBELL EARLY.

(Labrusca, Vinifera.)

1. *Ohio Hort. Soc. Rpt.*, 1892–3:48. 2. *Rural N. Y.*, 52:829. 1893. *fig.* 3. *Ib.*, 53:666. 1894. 4. *Bush. Cat.*, 1894:98. *fig.* (Frontispiece). 5. *Rural N. Y.*, 55:419, 658. 1896. *fig.* 6. *Am. Pom. Soc. Rpt.*, 1897:11, 48. 7. *Rural N. Y.*, 57:182, 642. 1898. 8. *Ib.*, 58:546, 786. 1899. 9. *Mich. Sta. Sp. Bul.*, 27:9. 1904.

CAMPBELL (9).

Probably no American grape has ever been more favorably received than Campbell Early, or after introduction has been disseminated more rapidly. The fact that it came from a grape-breeder who had already given viticulture several valuable varieties, with the statement that this was the result of years of experimenting and the greatest triumph of a life devoted to improving grapes, gave warrant for the enthusiasm with which it was received. Nor did first impressions belie the oft-made statement that Campbell Early represented a phenomenal advancement in grape culture. Bunch, berry and vine seemed to indicate that this was the best black American grape under cultivation. Nearly two decades have passed since Campbell Early was introduced, and though admitted by all to be a good grape, yet it has hardly met the expectations of the grape-growers who from almost every state and territory welcomed the newcomer.

The preeminently meritorious qualities of Campbell Early are: High

CAMPBELL EARLY

quality when mature; freedom from foxiness and from acidity about the seeds; small seeds which easily part from the flesh; earliness of maturity, ripening nearly a fortnight before Concord; large size and attractive appearance of bunch and berry (the color-plate does not do the Campbell Early justice as to size of berry and bunch); comparative hardiness of the vine; and good shipping and keeping qualities. Campbell Early falls short chiefly in not being adapted to as many soils and conditions as are some of the varieties with which it must compete and in all but localities well adapted to it the variety lacks productiveness. In other words it is somewhat lacking in that elasticity of constitution so characteristic of Concord. Its reputation for quality has suffered, and to the detriment of the variety, because it attains its full color before it is ripe and is therefore often marketed in an unripe condition. The fruit is quite variable in size as grown under different conditions and somewhat so as grown in the same vineyard, ranging in size of bunch from very large to small, differing somewhat in shape and with some compact and with some loose clusters. The color of the berry is not as attractive as that of Concord as it has less of the waxy bloom which makes the last named sort so handsome.

But the weaknesses attributed to Campbell Early do not wholly explain why so good a variety has seemingly failed to meet expectations. Can it be that the fault is with the American grape-grower more than with the grape? American growers are not yet willing to give varieties of grapes the particular care that each may need for its best development, but seemingly prefer to grow those sorts which are cosmopolitan as to environment and which will thrive under a general treatment. It cannot be that the consumers of this fruit care for less than a dozen of the several hundred American grapes; or that under the varied conditions of half a continent over which grow a score of species of wild grapes but a meager half dozen varieties can be grown for commercial purposes. If our grape-growers were willing to give the Campbell Early, and a score of other sorts of superior merit, the special care that European vineyardists give the hundreds of varieties they successfully grow, our viticulture would not long remain confined to the culture of a few grapes of mediocre quality.

The name commemorates the services to viticulture of the originator

of the variety, Geo. W. Campbell[1] of Delaware, Ohio, who devoted a long and active life to the improvement of the grape. The variety is a seedling of Moore Early pollinated by another production of Campbell's, which was a seedling of Belvidere pollinated by Muscat Hamburg. Campbell Early bore for the first time in 1892, and was soon after introduced by George S. Josselyn of Fredonia, New York. It is now known and grown throughout the grape regions of eastern America.

Vine vigorous to medium, hardy, productive to very productive. Canes of average length and number, somewhat thick, dark reddish-brown, surface often roughened with small warts; nodes intermediate in size, flattened; internodes medium to short; diaphragm of mean thickness; pith of average size; shoots pubescent; tendrils intermittent, rather short, trifid to bifid.

Leaf-buds intermediate in size, inclined to long, slender to medium, pointed to conical, open early. Young leaves heavily tinged on lower surface and along margin of upper surface with bright carmine. Leaves medium to large, thick to medium; upper surface green, slightly glossy, intermediate in smoothness; lower surface bronze to pale green, heavily pubescent; veins distinct; lobes often three in number but usually entire, terminal lobe acute; petiolar sinus rather shallow, medium to wide; basal sinus usually pubescent; lateral sinus varying from medium wide to a mere notch, frequently dentate; teeth shallow to medium, narrow. Flowers fertile, open in mid-season; stamens upright.

Fruit variable in season, extending through a long period, becomes marketable somewhat earlier than Worden, keeps and ships unusually well. Clusters variable in size ranging from very large to medium, rather long and broad, tapering to cylindrical, frequently single-shouldered, usually two bunches per shoot, compact to slightly loose; peduncle short to medium, thick; pedicel below average in length and thickness, covered with small numerous warts; brush long, light wine color. Berries somewhat variable in size, usually large, roundish to slightly oval, dark purplish-black, rather dull

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[1] George W. Campbell was born in Cortlandville, New York, in 1817. The family moved to Ohio in 1821. In early life Campbell was a printer and editor, as his father had been before him. In 1849 he moved from Sandusky, Ohio, to Delaware in the same State and it was in the latter place that his attention was first turned to horticulture as a livelihood, although he had been interested in it as an amateur much earlier. He was a continuous member of the American Pomological Society from the time of its organization in 1850 until his death. He raised thousands of seedling grapes, of which the following were given names: Campbell Early, Concord Chasselas, Concord Muscat, Juno, Lady, Purity, Triumph, White Delaware. All of these are practically obsolete in the North except Campbell Early and Lady.

Campbell died at his home in Delaware, Ohio, in 1898. For many years before his death he had been the leading writer and speaker in the North on the culture of the grape and on grape-breeding, and his work had a marked influence on the improvement of viticulture.

as the season advances, covered with heavy blue bloom, persistent, moderately firm. Skin medium to thin, tough, does not crack, adheres slightly to the pulp, contains a small amount of dark red pigment, somewhat astringent. Flesh greenish, translucent, juicy, varying from rather tough to nearly soft, slightly coarse, not foxy, somewhat vinous, nearly sweet from skin to center, quality good and improves by hanging on the vines, superior to Concord. Seeds separate readily from the flesh, one to four, average three, of medium size and length, rather broad, light brown, often with yellowish tips; raphe obscure; chalaza intermediate in size, slightly above center, oval, obscure.

CANADA.

(Riparia, Labrusca, Vinifera.)

1. *Horticulturist*, 22:363, 365. 1867. *fig.* 2. *Rec. of Hort.*, 1868:44. 3. Downing, 1869:533. 4. *Bush. Cat.*, 1883:79. *fig.* 5. *N. Y. Sta. An. Rpt.*, 10:494. 1891. 6. *Ib.*, 17:527, 548, 554, 559. 1898. 7. *Traité gen. de vit.*, 5:182. 1903.

ARNOLD'S No. 16 (1, 2, 5). *Arnold's No. 16* (3, 4, 7).

Canada is justly considered the most desirable of Arnold's several hybrids of Riparia and Vinifera and is well known in Europe as well as in America. In France when American varieties were being largely used in the reconstruction of the vineyards destroyed by phylloxera, Canada was one of the prime favorites, because of its short period for fruit development and maturity and the comparatively high quality of the wine which could be made from it. In America it has never gained great popularity on account of its susceptibility to fungal diseases. In this respect as in some others, it shows Vinifera more than Riparia parentage; thus in shape, color and texture of foliage, in the flavor of the fruit, and in the seeds there are decided indications of Vinifera while the vine, especially in the slenderness of the shoots, and the bunch and berry, shows Riparia. If, as is surmised, there is some Labrusca in Clinton, the Riparia parent of Canada, there are no discernible traces of the first named species in this variety. Canada and Brant, its full brother, are often confused with each other but there are numerous minor differences in buds, foliage, canes, in the shape of the bunch, in the seeds and in the time of ripening which a reading of the descriptions of the two varieties will reveal. Canada has little value as a dessert fruit but makes a very good red wine, having, according to the French, a most agreeable bouquet, but in America it is surpassed by other wine grapes in so many characters that it can probably never attain a place in this country for other than breeding purposes.

The grape to which Arnold[1] gave the name Canada is a seedling of Clinton, a Labrusca-Riparia hybrid, fertilized by Black St. Peters, a variety of *Vitis vinifera*. Arnold planted the seed which produced Canada and its brother Brant about 1860. During the decade that followed the variety was sent out as *Arnold No. 16*, but as it became more widely distributed the name was changed to Canada.

Vine medium to very vigorous, hardy, not always healthy, usually productive. Canes long, numerous, variable in size but averaging slender, nearly ash-gray at internodes to reddish-brown at nodes, covered with a slight blue bloom; nodes enlarged, not flattened; internodes above medium to short; diaphragm of average thickness, rather large; shoots strongly pubescent; tendrils intermittent, nearly short, trifid to bifid.

Leaf-buds intermediate in size, short, of average thickness, conical to obtuse, open rather late. Young leaves pale green with faintest trace of carmine, prevailing color green on upper and lower sides. Leaves intermediate in size, medium to thin; upper surface light green, nearly smooth; lower surface pale green, hairy; veins obscure; lobes five in number, often obscure, terminal lobe acute to acuminate; petiolar sinus deep, medium to narrow; basal sinus variable in depth and width; lateral sinus usually deep and narrow when well defined; teeth deep, wide. Flowers occasionally on plan of six, somewhat fertile to partly sterile, open moderately early; stamens upright.

Fruit ripens in mid-season or later, keeps fairly well. Clusters intermediate in size, long to medium, rather slender, uniform, often strongly cylindrical, sometimes single-shouldered, very compact; peduncle short, slender; pedicel long, slender, nearly smooth; brush short, light brown. Berries not uniform, average medium to small, roundish when not compressed by compactness of cluster, attractive purplish-black to black, glossy, covered with heavy dark blue bloom, persistent, firm. Skin thin, does not crack, rather tough, adheres but slightly to the pulp, contains a slight amount of pigment, not astringent. Flesh rather dark green, very juicy, fine-grained, somewhat tender when fully ripe, spicy, pleasant vinous flavor, nearly sweet to agreeably tart, ranking medium to above in quality. Seeds separate readily from pulp, one to three, average two, intermediate in size and breadth, of average length, blunt, light brown; raphe completely obscure; chalaza intermediate in size, slightly above center, oval, distinct, somewhat obscure.

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[1] Charles Arnold was born in Bedfordshire, England, in 1818. In 1833 he removed to Paris, Ontario. He was an enthusiastic hybridizer in many lines, producing a white wheat, the Ontario apple, and the American Wonder pea. In 1853 he established the Paris Nurseries. Of his numerous seedling grapes he gave names to Autuchon, Brant, Canada, Cornucopia and Othello. He was for many years prominent in the agricultural and scientific associations of his adopted country. His object in crossing grapes was to secure varieties sufficiently hardy and early for the Canadian climate. In this he was in a measure successful but his crosses are so susceptible to mildew and rot that their culture has been generally abandoned in both Canada and the United States. He died at his home in Paris, Canada, in 1883.

CANADA

CANANDAIGUA.

(Labrusca, Vinifera.)

Canandaigua has not been generally distributed and would not be mentioned here were it not for its exceptional keeping qualities. To test the keeping qualities of grapes in common storage, 265 varieties were put in the fruit house at this Station in the fall of 1907. The test ended April 16, 1908, when it was found that Canandaigua was in the best condition of all varieties. Its quality is very good at picking time but seems, if anything, to improve in storage, and it was as good at the end of the test as at the beginning. Its vine characters are those of Labrusca-Vinifera hybrids and such, as the variety grows on the Station grounds, as make it the equal of the average cultivated hybrid of these two species. The characters of the fruit, too, show plainly an admixture of Vinifera and Labrusca so combined as to make the grapes very similar to the best of such hybrids. The variety is quite worthy of trial.

Canandaigua is a chance seedling found by E. L. Van Wormer of Canandaigua, New York, growing among wild grapes. Its high quality and handsome appearance attracted his attention and the vine was put under cultivation, after which its long-keeping qualities were discovered. Vines were sent to this Station for testing in 1897. All of its characters indicate that it is a hybrid between Labrusca and Vinifera.

Vine vigorous, doubtfully hardy, medium to productive. Tendrils semi-continuous to semi-intermittent, bifid, dehisce early. Leaves large to medium, thin. Flowers sterile or sometimes partly fertile, open in mid-season; stamens reflexed. Fruit ripens after mid-season, keeps unusually well. Clusters variable in size, usually heavily single-shouldered, loose to medium. Berries large to medium, slightly oval to roundish, black, covered with a fair amount of blue bloom, persistent. Flesh firm, sweet and rich, good in quality, improving as the season advances. Seeds often long, with enlarged neck; raphe shows as a partially obscured cord in a medium deep groove; chalaza above center, distinctly pear-shaped.

CAPTAIN.

(Lincecumii, Rupestris, Labrusca, Vinifera.)

1. *Rural N. Y.*, 60:637. 1901. 2. *Mo. Hort. Soc. Rpt.*, 1904:306. 3. *Munson Cat.*, 1906–7:16.

Captain has not made a good showing in the Station vineyard and we have no reports of it from other parts of the State. The clusters are large

and long but very loose and unattractive in appearance, and the fruit ranks low in quality. We are forced to conclude, judging from the several seasons the variety has fruited on these grounds, that it is of little value in New York. The breeding of Captain is such that it could hardly be expected to thrive in this latitude.

Captain was produced by T. V. Munson from seed of America fertilized with R. W. Munson.

Vine vigorous, hardy, moderately productive. Canes long to medium, numerous, covered with rather thick blue bloom; tendrils intermittent, bifid and trifid. Leaves very large to medium, thick, not pubescent but very hairy along ribs. Flowers semifertile, open rather late; stamens upright. Fruit ripens later than Concord, does not keep long although it ships well. Clusters large to above medium, long, slender, sometimes double-shouldered, very loose. Berries very large to below medium, inclined to roundish, black, covered with heavy blue bloom, persistent. Skin contains a large amount of purplish-red pigment. Flesh medium juicy, coarse, tender, lacks character, tart from skin to center, fair in quality. Seeds numerous, separate easily from the pulp.

CARMAN.

Lincecumii, Vinifera, Labrusca, Bourquiniana?

1. *Gar. Mon.*, 28:304. 1886. 2. *Rural N. Y.*, 50:221, *fig.*, 643, 690. 1891. 3. *Ib.*, 51:147, 607 774. 1892. *fig.* 4. Husmann, 1895:127. 5. *Am. Pom. Soc. Cat.*, 1897:20. 6. *N. Y. Sta. An. Rpt.*, 17:548, 554. 1898. 7. *Tex. Sta. Bul.*, 48:1149, 1154. 1898. *fig.* 8. *Mo. Sta. Bul.*, 46:38, 43, 45, 49. 1899. 9. *Rural N. Y.*, 59:674, 690, 752, 770, 802, 819. 1900. 10. *Ga. Sta. Bul.*, 53:41, 51, 52, 54. 1901.

The Carman is another grape having the characters of three species — *Vitis lincecumii*, *V. labrusca* and *V. vinifera* — and hence of interest to grape improvers at least. In the twenty-three years it has been known in New York it has not become popular with grape-growers chiefly because it ripens too late for this region and when ripe does not attain the high quality ascribed to it elsewhere. Its most valuable character is that of long keeping, whether while hanging on the vine or after harvesting.

T. V. Munson of Denison, Texas, raised Carman from seed of a wild Post-oak grape taken from the woods, pollinated with mixed pollen of Triumph and Herbemont. It was introduced in 1892 and placed on the American Pomological Society fruit catalog list in 1897. The variety was

CARMAN

named in honor of E. S. Carman, for many years editor of the *Rural New Yorker*, and a plant-breeder of note.

Vine very vigorous to medium, hardy, lacking in productiveness. Canes long, numerous, thick, brown to reddish-brown; nodes but slightly enlarged, flattened; internodes long to medium; diaphragm somewhat thick; pith above medium size; shoots very pubescent; tendrils intermittent, long, trifid.

Leaf-buds rather large, nearly short, thick, conical to obtuse, open rather late. Young leaves slightly tinged with rose on upper and lower sides. Leaves in good condition until injured by frost, large, thick; upper surface light to dark green, somewhat glossy, older leaves rugose; lower surface pale green, pubescent; veins indistinct; terminal lobe acute to obtuse; petiolar sinus deep to narrow; basal sinus often absent or shallow; lateral sinus medium to shallow when present; teeth intermediate in depth and width. Flowers on plan of five or six, fertile or nearly so, open very late; stamens upright.

Fruit ripens just before Catawba, an excellent keeper. Clusters variable in size, of average length and breadth, tapering to cylindrical, frequently single-shouldered, usually compact; peduncle above medium length and thickness; pedicel short, slender, smooth with very slight swelling at point of attachment to berry; brush short, slender, wine-colored. Berries inferior in size, roundish to slightly oblate, dark purplish-black to black, glossy, covered with a fair amount of blue bloom, persistent, firm. Skin rather thin, tough, nearly free from pulp, contains little or no pigment, not astringent. Flesh yellowish-green, not juicy, somewhat tender when fully ripe, has some Post-oak flavor, vinous, spicy, sweetish at skin to tart next the seeds, good to very good. Seeds separate easily from pulp, one to four, average two or three, small, of mean length and breadth, blunt, brownish; raphe sometimes cord-like; chalaza intermediate in size, slightly above center, oval to pear-shaped, distinct.

CATAWBA.

(Labrusca, Vinifera.)

1. Adlum, 1823:109, 139. 2. Ib., 1828:173. 3. Ib., 1828:176. 4. Prince, 1830:175. 5. Ib., 1830:180. 6. *U. S. Pat. Off. Rpt.*, 1845:312, 938, 939. 7. *Ib.*, 1847:462, 463, 464, 465, 466, 467, 469. 8. *Mag. Hort.*, 15:513. 1849. 9. *West. Hort. Rev.*, 1:15. 1850. 10. *U. S. Pat. Off. Rpt.*, 1851:48, 49, 51. 11. *Am. Pom. Soc. Cat.*, 1852:54. 12. Buchanan, 1852:23, 71, 96, 106. 13. Elliott, 1854:244. 14. Hooper, 1857:274. 15. *Horticulturist*, 16:120. 1861. 16. *Mag. Hort.*, 28:506. 1862. 17. *Ib.*, 29:73. 1863. 18. *Gar. Mon.*, 5:73, 74, 184. 1863. 19. *N. Y. Ag. Soc. Rpt.*, 1864:42. 20. *Am. Pom. Soc. Rpt.*, 1867:43. 21. Fuller, 1867:220, 241, 248. 22. *Gar. Mon.*, 9:214. 1867. 23. *Horticulturist*, 23:298. 1868. *fig. of leaf.* 24. Downing, 1869:533. 25. Barry, 1872:421. 26. *Gar. Mon.*, 14:167. 1872. 27. *Ohio Hort. Soc. Rpt.*, 1875–6:72, 73. 28. *Bush. Cat.*, 1883:80. *fig.* 29. *Am. Pom. Soc. Rpt.*, 1883:118. 30. *Am. Gard.*, 12:581. 1891. 31. *Gar. and For.*, 8:487. 1895. 32. *N. Y. Sta. An. Rpt.*, 15:432. 1896. 33. *Ib.*, 17:527, 540, 543, 544, 548, 552. 1898. 34. *Ev. Nat. Fruits*, 1898:53. 35. *N. Y. Sta. An. Rpt.*, 18:367, 374, 386, 396. 1899. 36. *Mo. Sta. Bul.*, 46:38,

43, 44, 45. 1899. 37. *Kan. Sta. Bul.*, 110:235. 1902. 38. *Rural N. Y.*, 61:722. 1902. 39. *Traité gen. de vit.*, 6:282. 1903.

Arkansas (13). *Catawba Tokay* (4, 13, 18, 24, 39). *Cherokee* (15). *Fancher* (?24, 39). *Keller's White* (39). *Lebanon Seedling* (13, 18). *Lincoln* (9). *Mammoth Catawba* (39). *Mead's Seedling* (39). *Merceron* (39). MICHIGAN (16, 17). *Michigan* (24, 39). MUNCY (3). MUNCY PALE RED (5). *Muncy, pale red?* (4). *Omega* (39). *Red Muncy* (4?, 13, 18, 24, 28, 39). *Rose of Tennessee* (18). *Saratoga* (?24, 39). *Singleton* (13, 18, 28, ?39). *Tekomah* (39). TOKAY (1). *Tokay* (4, 28, 39). *Virginia Amber* (18). *White Catawba* (39).

From many points of view the Catawba is the most interesting of our American grapes. The elasticity of constitution which enables it to adapt itself to many environments and therefore to succeed in a vast region; its possible existence for centuries in the wild state, for the records of a century have not divulged the secret of its origin, of its ancestry, or of its introduction; its high quality and attractive appearance which give it intrinsic value as a table grape and for making wine; the fact that it was our first great American grape and that after a century it is still one of the four leading varieties of grapes cultivated in eastern America and that after this lapse of time it is the chief of all northern varieties for wine-making; all these make Catawba of prime interest to the grower of American grapes. The Catawba, too, has had the rare distinction of having a poet, Longfellow, sing its praises:

"Very good in its way is the Verzenay
Or the Sillery, soft and creamy,
But Catawba wine has a taste more divine,
More dulcet, delicious and dreamy.
There grows no vine, by the haunted Rhine,
By the Danube or Guadalquiver,
Nor island or cape, that bears such a grape
As grows by the beautiful River."

In Chapter II, American Grapes, we have seen how important a part the Catawba played in the first grape regions of this country. It is still the leading grape along the shores of Lake Erie in northern Ohio, and about the Central Lakes of New York. In the latter region immense areas are devoted to this variety, the product going to the general market and to the wine-cellars where it is the chief sort used in the making of champagne. Its characters are such that it is not too much to say that did it but ripen two weeks earlier in the other grape regions of New York, the

CATAWBA

Chautauqua, Hudson and Ontario regions, the Catawba would rival the Concord. Because of late ripening in New York this variety is at its best only about the Central Lakes and on land extending back from the water to an altitude of one hundred feet above the lake surface; here as fine Catawbas are grown as anywhere in the world. As to soil, it thrives in sand, gravel or clay provided there be an abundance of food and humus, good drainage and plenty of bottom heat.

Of all the commercial grapes grown in New York Catawba is the best keeper, lasting until March or later. Because of its fine quality it often brings a higher price than other varieties and its reputation as a dessert grape would be still better were it not too often picked before fully ripe and therefore sour and unpalatable. The Catawba is the standard red grape in the markets, and other red varieties are often sold under its name. It makes a good light-colored wine, which as has been said, is largely used as a base for champagne. The vine is vigorous, hardy and productive but the foliage and fruit are susceptible to fungi and this constitutes the chief defect of the variety and accounts for the decline and the passing out of Catawba in many of the grape regions of the past in the United States and its unpopularity in some of the grape regions of the present. In its botanical characters, in its adaptation, and in its susceptibilities it suggests *Vitis vinifera* crossed with *Vitis labrusca*, a possibility to be discussed in a later paragraph.

The characters of Catawba seem readily transmissible to its offspring and, beside having a number of pure-bred descendants which more or less resemble it, it is one of the parents of a still greater number of cross-breeds which, as a rule, inherit many of its characters. As with Catawba, most of its progeny show Vinifera characters; as intermittent tendrils, the Vinifera color of foliage, a vinous flavor wholly or nearly free from foxiness, and the susceptibilities of Labrusca-Vinifera hybrids to certain insects, fungi, and environmental conditions.

Catawba was introduced by John Adlum of the District of Columbia about 1823. Adlum secured cuttings of this variety from a Mrs. Scholl of Clarksburgh, Montgomery County, Maryland, in the spring of 1819. This vine had been planted by Mrs. Scholl's husband, who had since died. He had always called it Catawba, but the family did not know from what

source it had been secured. Owing to the statement of a German priest that it was the same as the Tokay of Hungary, Mr. Adlum called it by that name. Some years later, when he found this to be a mistake, he changed the name back to Catawba. Adlum found the same variety on a trellis on land belonging to a Mr. J. Johnston, near Fredericktown, Maryland. He also found a similar variety on a farm of his in Lycoming County, Pennsylvania, which he introduced under the name of Muncy. Later these two varieties were judged to be identical. Neither Adlum nor Prince was able to trace the origin of Catawba, though both were among the chief viticulturists of their day, were instrumental in distributing this variety, and had correspondents in all parts of the Union.

In 1850, S. Mosher of Saloma Springs, Kentucky, wrote an article in the *Western Horticultural Review*, giving an account of the finding of the original vine by Dr. Solomon Beach, in 1821, on the farm of William Murry, about ten miles from Asheville, Buncombe County, North Carolina. The Murrys informed Beach that the grape was an old variety in the neighborhood and that cuttings and roots had been sent to various places. This story was later confirmed by Ravenel, who talked with a son of the original Murry and was told that General Davy, in 1807, then United States Senator from South Carolina, had secured some of the vines and had carried some of them to Washington. This would account for its falling into the hands of Adlum. It must be said, however, that it appears strange that none of the many correspondents of Adlum or Prince, some of whom lived not very far from where the Catawba was supposed to have been found, had heard of this variety. That the Murrys had a vine growing on their farm of peculiar excellence, is probable; that it was Catawba is by no means certain. All that can be said is that the origin of Catawba is not positively known.

Catawba was introduced into the grape region around Cincinnati by Longworth in 1825. The favorable reports of the variety from this region undoubtedly did much to secure its early and wide distribution. In most sections it was compared with the Alexander or Cape grape, and proved itself easily the superior in both vine and fruit characters. Up to the time of the introduction of Concord, Catawba was the most popular American grape cultivated. After that time, the earlier season and superior

vine of the former variety enabled it to supplant Catawba in many sections. The Catawba was placed on the grape list in the first American Pomological Society fruit catalog in 1852.

The species to which Catawba belongs is uncertain. It is generally classed as Labrusca, but practically all of those who have raised large numbers of seedlings of the variety are of the opinion that it has some Vinifera blood in its composition. The general appearance of the vine would indicate Labrusca, but the vinous flavor of the fruit, the susceptibility to mildew, the appearance of occasional seeds, and the character of the seedlings, many of which resemble Vinifera more than the parent, all indicate that there is a strain of Vinifera present.

Vine vigorous to medium, hardy, productive, subject to mildew in unfavorable seasons. Canes of average length, numerous, rather thick, moderately dark brown with slight ash-gray tinge; nodes enlarged, sometimes slightly flattened; internodes of mean length; diaphragm rather thin; pith rather large; shoots slightly pubescent; tendrils continuous, of fair length, bifid to trifid.

Leaf-buds intermediate in size and thickness, short, conical to nearly obtuse, open moderately late. Young leaves tinged rose carmine on upper and lower sides. Leaves large, of average thickness; upper surface rather light green, dull, moderately smooth; lower surface grayish-white, heavily pubescent; veins well defined; lobes sometimes three, terminal lobe acute; petiolar sinus deep, narrow to medium; basal sinus often lacking; lateral sinus of average depth, narrow; teeth rather shallow, narrow. Flowers fertile, open rather late; stamens upright.

Fruit late, one of the best keepers, lasting until March or later. Clusters large to medium, rather long, usually broad, nearly cylindrical to tapering, single-shouldered to sometimes double-shouldered, rather loose to compact; peduncle of average length, rather slender; pedicel variable in length, intermediate in thickness, covered with but few small, inconspicuous warts, considerably swollen at point of attachment to berry; brush short, pale green. Berries intermediate in size, oval to roundish, dull purplish-red, covered with a moderate amount of lilac bloom, not inclined to drop from pedicel, firm. Skin rather thick, variable in toughness, slightly adheres to pulp, with no pigment, somewhat astringent. Flesh green, translucent, juicy, fine-grained, slightly tough to soft, depending upon age, vinous, often sprightly with some foxiness, sweet and rich, very good in quality. Seeds separate easily from flesh, frequently abortive, average two, medium size, broad, often with a short prominent neck, distinctly notched, blunt, brownish; raphe obscure; chalaza large, above center, oval to nearly roundish, rather distinct.

CAYUGA.

(Labrusca, Vinifera?)

1. *Rural N. Y.*, 45:265. 1886. *fig.* 2. *N. Y. Sta. An. Rpt.*, 11:617. 1892. 3. *Bush. Cat.*, 1894:100. 4. *Ga. Sta. Bul.*, 53:41, 54. 1901. *fig.*

Sharon (3).

Cayuga is probably a descendant of Isabella through Adirondac. It resembles its parent in both its good qualities and its faults. The first are beauty, quality and earliness of fruit; the second lack of vigor, susceptibility to fungi and lack of hardiness. Although known since 1886, the Cayuga was never widely distributed in New York and is now rarely found.

The variety was originated by D. S. Marvin, Watertown, New York, from seed of Adirondac. Marvin, in a personal letter, says that the usually imputed parentage of Eumelan crossed with Adirondac is a mistake, and refers to another variety. Bush gives Sharon as a synonym of Cayuga but this appears to be an error.

Vine not vigorous, lacks in hardiness, an uncertain bearer, unproductive. Tendrils continuous, bifid. Leaves medium to small, inclined to dark green, thick. Flowers vary from nearly fertile to almost sterile, open in mid-season; stamens upright. Fruit ripens as early as Champion. Clusters variable in size, usually short and not shouldered, not uniform in compactness. Berries medium to large but some years often small and seedless, much like Isabella in shape, unattractive in color, ranging from dull reddish-purple to blackish, covered with blue bloom. Flesh tender, vinous, mild from skin to center, variable in flavor and quality, ranking from fair to very good. The seed-coat is often rough and warty.

CENTENNIAL.

(Labrusca, Aestivalis, Vinifera.)

1. *Am. Pom. Soc. Rpt.*, 1881:66. 2. *Bush. Cat.*, 1883:81. 3. *N. Y. Sta. An. Rpt.*, 9:330. 1890. 4. *Ill. Sta. Bul.*, 28:263. 1893. 5. *Bush. Cat.*, 1894:101. *fig.* 6. *Mass. Hatch. Sta. Bul.*, 37:12, 15. 1896. 7. *Ark. Sta. Bul.*, 39:28. 1896. 8. *N. Y. Sta. An. Rpt.*, 17:527, 548, 552. 1898. 9. *Tex. Sta. Bul.*, 48:1149, 1154. 1898. 10. *Mo. Sta. Bul.*, 46:38, 45, 46. 1899. 11. *Ga. Sta. Bul.*, 53:41. 1901. 12. *Kan. Sta. Bul.*, 110:247. 1902.

CONTINENTAL (1) but incorrectly.

Centennial is now scarcely heard of though at the time of its introduction, shortly after the Centennial of 1876, it was looked upon as a valuable acquisition. Its chief meritorious attributes are high quality and attractive appearance; while its faults, which greatly outweigh its merits, are lack of

vigor, susceptibility to fungi, and lack of hardiness. Centennial is much like Delaware and is surpassed by it in nearly all respects.

The variety was originated by D. S. Marvin, of Watertown, New York. It is a cross between a Labrusca seedling of Marvin's and a seedling of Eumelan. It was first fruited in 1875, and was introduced in 1882 by the originator. Vines were received by this Station in 1883. The tenderness and lateness of ripening of Centennial, as well as its botanical characters, indicate Vinifera blood.

The following description is a compilation from several sources:

Vine vigorous, somewhat tender, fairly productive. Leaves rounded, slightly three-lobed, smooth. Clusters medium to small, compact, tapering or cylindrical, sometimes slightly shouldered. Berries medium to small, pale red or amber color with thin white bloom, adhere firmly to pedicel. Skin rather thick, tough. Flesh tender, juicy, sweet, resembling Delaware in flavor, good to very good. About the same season as Concord.

CHALLENGE.

(Labrusca, Vinifera?)

1. *Am. Jour. Hort.*, 4:72. 1868. 2. *Ib.*, 7:102. 1870. 3. *Bush. Cat.*, 1883:82. 4. *Ill. Sta. Bul.*, 28:259. 1893. 5. *Mo. Sta. Bul.*, 46:38, 43, 45, 46. 1899. 6. *Ga. Sta. Bul.*, 53:41. 1901. 7. *Kan. Sta. Bul.*, 110:238. 1902.

Some years ago Challenge was considered an excellent dessert grape, being of good quality, hardy, and fairly healthy. Small plantations of it still exist in New York, but it is rapidly passing out of cultivation.

Challenge was originated about 1860 by Archer Moore, of Hammonton, New Jersey. He supposed it to have come from seed of Concord fertilized by Royal Muscadine. The variety was introduced by William F. Bassett of the same place. We do not have a vine of Challenge growing on the Station grounds, and the description written below is compiled from various sources.

Vine very vigorous; shoots slender, long. Leaf of medium size, dark green. Clusters rather large, compact, tapering, usually shouldered. Berries medium in size, round, pale red to reddish-purple in color with very thin bloom and inconspicuous dots, juicy, slightly acid; quality medium to good; not separating readily from the seeds. Season shortly after Concord.

CHAMPION.

(Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1871:69. 2. *Am. Hort. An.*, 1871:83. 3. *Horticulturist*, 30:151. 1875. 4. *Mich. Pom. Soc. Rpt.*, 1875:88, 295. 5. *Gar. Mon.*, 20:47. 1878. 6. *Montreal Hort. Soc. Rpt.*, 1879:93. 7. *Am. Pom. Soc. Cat.*, 1879. 8. *Am. Pom. Soc. Rpt.*, 1881:36. 9. *Bush. Cat.*, 1883:82. 10. *Ib.*, 1883:138. 11. *Tenn. Sta. Bul.*, Vol. 9:172. 1896. 12. *N. Y. Sta. An. Rpt.*, 17:527, 528, 548, 552, 554. 1898. 13. *Miss. Sta. Bul.*, 56:11. 1899. 14. Budd-Hansen, 2:374. 1902.

Beaconsfield (6, 8, 9, 11). *Champion* (10). EARLY CHAMPION (5). *Early Champion* (9, 11). *Tallman?* (5). TALLMAN SEEDLING (1, 2). TALMAN'S SEEDLING (10). *Talman's Seedling* (9, 11). *Tolman's Seedling* (4). *Tolman* (10).

Champion is still a favorite early grape with some commercial growers after having been grown for a generation, though its poor quality should have driven it from cultivation years ago. Champion and Hartford are rivals as early market grapes and for the distinction of being the poorest in quality of all commonly cultivated grapes. The variety under consideration is sourer and less agreeable to the taste than many wild grapes. The characters which have kept it in cultivation are earliness, good shipping qualities, though it does not keep well, productiveness, attractive appearance, and a vigorous hardy vine. The hardiness of the vine and its short season of fruit development and maturity make it a good variety for northern and cold climates. This grape is best, in appearance of fruit, in quality, and in the quantity produced, on a comparatively light sandy soil. As grape consumers become more appreciative of quality, Champion will be grown less and less.

The origin of Champion is unknown. It was first grown about 1870 in New York. In 1871 Elliott acknowledged receipt of specimens of this variety from William Chorlton of Staten Island. It was at that time generally known as Tallman or Tallman's Seedling. At about the same time it was being propagated and sold by R. J. Donnelly and J. I. Stone of Charlotte, Monroe County, as Champion. Although many efforts have been made, no one has succeeded in tracing the variety to the original vine. At one time it was stated to have originated in the vicinity of New Orleans, Louisiana, but later the southern Champion was found to be a different variety. This variety was early introduced into Canada where it was known as Beaconsfield, owing to its being first planted in that country in a large vineyard owned by a gentleman of that name.

CHAMPION

Vine vigorous to very vigorous, hardy, productive to very productive. Canes intermediate in length and number, of average size, rather dark brown; nodes enlarged, flattened; internodes medium to below in length; diaphragm thick; pith nearly large; shoots pubescent; tendrils continuous, inclined to long, bifid.

Leaf-buds of medium size, short, rather thick, obtuse to conical, open in mid-season. Young leaves strongly tinged on lower side and along margin of upper side with carmine, making the prevailing color rose carmine. Leaves medium to large, intermediate in thickness; upper surface dark green, dull, rugose; lower surface dull gray often with trace of bronze, slightly downy; veins indistinct; lobes usually three, often obscurely five, terminal lobe acute; petiolar sinus deep to medium, of average width; teeth of fair depth, shallow. Flowers fertile, open medium early; stamens upright.

Fruit ripens early, three weeks or more before Concord and about a week before Hartford, ships well but does not keep well, as its season is very short. Clusters medium to small, of mean length and breadth, blunt, cylindrical to slightly tapering, usually not shouldered, medium to compact; peduncle short, rather thick; pedicel inclined to short, covered with small inconspicuous warts; brush whitish tinged with brown. Berries medium to above in size, roundish, dull black covered with a moderate amount of blue bloom, not always persistent, somewhat soft. Skin thick, tender, adheres considerably to the pulp, contains a fair amount of light purplish pigment, astringent. Flesh light green, translucent, juicy, fine-grained, tender, foxy, rather sweet next the skin, agreeably tart at center, poor in quality. Seeds slightly adherent, one to five, average three, large, somewhat broad and long, blunt, light brown; raphe obscure; chalaza of fair size, slightly above center, circular, obscure.

CHAUTAUQUA.

(Labrusca.)

1. *N. Y. Sta. An. Rpt.*, **11**:618. 1892. 2. *Ib.*, **13**:602. 1894. 3. *Bush. Cat.*, **1894**:102. 4. *N. Y. Sta. An. Rpt.*, **17**:528, 548, 554. 1898.

In appearance Chautauqua is very similar to Concord, its parent, but it ripens a few days earlier and is of slightly better quality though it does not differ in these respects sufficiently to make it more than an easily recognized strain of Concord. Inasmuch as it originated, and for fifteen years has been known, in the region where the Concord reigns supreme, and has not yet come into prominence, it is fair to assume that it has some weakness and that the parent will remain dominant.

Chautauqua is a volunteer seedling of Concord found in a Concord vineyard near Brocton, Chautauqua County, New York, by H. T. Bashtite who sent vines of it to this Station in 1892.

Vine medium to vigorous, not always hardy, not productive. Tendrils continuous, mostly trifid. Leaves large, irregularly roundish, dark green; lower surface tinged with bronze. Flowers semi-fertile to nearly fertile, open in mid-season or earlier; stamens upright. Fruit ripens in mid-season or a few days earlier. Clusters medium to large, rather broad, sometimes single-shouldered, intermediate in compactness. Berries unusually large, roundish to slightly oval, dark purplish-black, covered with abundant blue bloom, shatter badly. Skin thin, very astringent. Flesh rather tough, vinous, sweet at skin to acid at center, good to very good in quality. The pulp separates readily from the few broad and plump seeds.

CLEVENER.

(Labrusca, Riparia, Aestivalis?)

1. *N. Y. Sta. An. Rpt.*, 10:494. 1891. 2. *Ib.*, 11:618. 1892. 3. *Rural N. Y.*, 52:381. 1893. 4. *Bush. Cat.*, 1894:103. 5. *N. Y. Sta. An. Rpt.*, 17:528, 548, 554. 1898.

There are two Cleveners discussed in American viticultural literature, the origin and history of both of which are briefly set forth below. In these general observations we need to consider but the northern one of the two grapes. This variety has long been grown in New Jersey and in New York and in both States is highly esteemed as a wine grape, the resulting wine being well flavored and of a dark inky-red color. The fruit is remarkable in coloring very early and in ripening very late. The vine is hardy, very vigorous, succeeds in various soils and since it bears grafts well it seems an excellent sort upon which to graft varieties which do not thrive on their own roots. It is self-sterile and must be planted with some other variety to set fruit well. Clinton makes an excellent pollenizer because it blooms at the same time, and because two wine grapes may be thus grown together. In spite of its good qualities, Clevener is hardly holding its own in the commercial vineyards of the State and it is not a desirable fruit for the amateur who wants a table grape.

The Clevener here described has been raised in the vicinity of Egg Harbor, New Jersey, for about forty years, but its place and time of origin are unknown. It is generally considered to be a Riparia but the continuous tendrils and other botanical characters indicate a strong admixture of Labrusca blood and possibly Aestivalis or Bicolor as the shoots and canes show considerable bloom.

The other variety under the name Clevener is a southern grape strongly resembling Rulander or Louisiana. Opinions differ as to whether it be of

Aestivalis or Bourquiniana blood. This variety is unknown in New York and of its origin and history there is no information.

Vine a rampant grower, hardy, medium to productive, somewhat subject to attacks of leaf-hoppers. Canes long, numerous, rather thick, dark reddish-brown, covered with a slight amount of bloom; tendrils continuous, bifid. Foliage very healthy; leaves unusually large, intermediate in thickness, dark green with well defined ribs showing through the thin pubescence of the under surface. Flowers sterile, open very early; stamens reflexed.

Fruit ripens late, and appears to keep well. Clusters do not always fill well, small to medium, rather short and slender, irregularly tapering, often with a medium-sized single shoulder, variable in compactness. Berries small to medium, roundish to slightly flattened, black, rather glossy, covered with blue bloom, persistent, firm. Skin rather tough, thinnish and inclined to crack, adheres slightly to the pulp, contains an unusually large amount of dark purplish-red pigment. Flesh reddish-green, moderately juicy, rather tender and soft, fine-grained, very slightly aromatic, spicy, neither so sprightly nor so high-flavored as other varieties of the same season, not good enough in flavor and quality in general for dessert purposes. Seeds separate rather easily from the pulp, intermediate in size and length, medium to above in width, notched, nearly sharp-pointed, dark brown; raphe shows as a very small cord; chalaza large, at center or slightly above, irregularly oval, distinct.

CLINTON.

(Riparia, Labrusca.)

1. Adlum, 1823:140. 2. Ib., 1828:176. 3. Prince, 1830:179. 4. Rafinesque, 1830:11. 5. *N. Y. Ag. Soc. Rpt.*, 1841:388. 6. *Horticulturist*, 2:121, 341. 1847. 7. *Ib.*, 8:120. 1853. *fig.* 8. *Am. Pom. Soc. Rpt.*, 1860:82. 9. *Am. Pom. Soc. Cat.*, 1862:90. 10. *Gar. Mon.*, 5:335. 1863. 11. Strong, 1866:332. 12. Husmann, 1866:50, 102. 13. Fuller, 1867:219. 14. *U. S. D. A. Rpt.*, 1869:85. *fig.* 15. *Bush. Cat.*, 1883:82. 16. *Can. Hort.*, 11:43. 1888. 17. *Bush. Cat.*, 1894:103, 104. *fig.* 18. *Ev. Nat. Fruits*, 1898:75. 19. *N. Y. Sta. An. Rpt.*, 17:528, 540, 544, 548, 554, 559. 1898. 20. *Rural N. Y.*, 59:7, 306. 1900.

WORTHINGTON (1, 2, 3, 4). *Worthington* (15, 17).

Clinton is now but little grown, its place having been taken by better varieties of its type. It has historical interest if not intrinsic value, for it played an important part in the beginning of American viticulture. Most viticulturists have ascribed to Clinton the distinction of being the first cultivated "variety of *Vitis riparia*," but without question this honor belongs to the Worthington of Adlum and Prince, with a strong probability that Clinton may be Worthington renamed. But it was as Clinton that *Vitis riparia* was disseminated for general culture and it is the name

Clinton that stands at the parental head of the long list of grapes now under cultivation from this species; and so, in spite of its being the usurper of Worthington's honor, and whether or not it be the older variety under an assumed name, it is probably best that Clinton continue to be considered the first of its race.

Clinton came into prominence, and brought the species to which it belongs to the notice of grape-growers, because of its vigor, hardiness and fruitfulness; and, later, its popularity was added to because of its immunity to phylloxera. The vine is so vigorous that its growth is rank and because of this and the straggling habit of growth it is very difficult to keep under control on trellises and in most situations needs a great deal of room. It can be grown in as high a latitude as any of our native grapes but it blooms so early in the spring that the blossoms are often caught by late frosts in northern climates. The immunity of Clinton to phylloxera led to its being planted very largely in France some years ago but it has now been discarded for better direct producers in that country. The defects of the variety are: The fruit is too small and sour and the seeds and skins too prominent for a market grape and the wine is not of high quality, being too raucous, though the harshness disappears somewhat with age. The fruit colors early in the season but does not ripen until late and therefore suffers greatly from birds. A slight touch of frost is supposed to improve its flavor. This variety is so sensitive to calcareous soils that where lime or chalk abounds the vines often die out after a few years. Clinton bears grafts well, making a quick and firm union with Labruscas and Viniferas, and roots very freely from cuttings.

This variety has been much used in grape-breeding and its blood can be traced in many valuable varieties, among which are most of the desirable wine grapes for the North. The offspring of Clinton are usually very hardy and this, taken with other desirable characters, makes it an exceptionally good starting-point for breeding grapes for northern latitudes. Its seedlings often show intermittent characters and otherwise indicate a strong strain of Labrusca.

Clinton began to attract attention in New York about 1840. J. W. Bissell, of Rochester, in the *Horticulturist* of January, 1848, writes that the vine from which cuttings were taken was found by L. B. Lang-

CLINTON

worthy, in the garden of a Mr. Peebles above Waterford on the Hudson. The name Clinton was given by Langworthy, who introduced it to the trade around Rochester about 1835. There were other cultivated varieties growing in the Peebles garden and the Clinton was not supposed to be a seedling. Although this account of the origin of the Clinton was published in the then most popular horticultural publication in the United States, there were no denials nor corrections made in any of the succeeding numbers. In 1863 there appeared in the *Elmira Advertiser* an account of the origin of this variety in which it was stated that the seed from which this variety had sprung was planted by Hugh White, then a member of Congress, in his father's garden in Whitesboro, in 1819. Two years later, so the story runs, when he was a junior in Hamilton College, Clinton, New York, White transplanted the vine east of the house of Dr. Noyes, with whom he then boarded. There were no denials of this report, probably on account of the fact that the introducer at Rochester was dead; and the account and Whitesboro as the place of origin were later generally accepted by horticultural writers. In 1852 the Ohio Pomological Society determined that the Worthington and the Clinton grapes were identical. Later this was generally accepted by viticulturists as being correct. The Worthington is an old sort known to Adlum and Prince, and was said by the latter to have originated in the vicinity of Annapolis, Maryland.

Clinton was placed on the grape list of the American Pomological Society fruit catalog in 1862, where it has since been retained.

Clinton is usually considered a Riparia, as most of the botanical characters indicate this species. However, occasional canes with continuous tendrils are characteristic of Labrusca.

Vine a rank grower, healthy, hardy, productive. Canes long, numerous, slender to medium, brown to reddish-brown; nodes enlarged, slightly flattened; internodes of average length; diaphragm thick to medium; pith large; shoots smooth; tendrils usually intermittent but sometimes continuous, bifid.

Leaf-buds rather large and short, thick, obtuse to conical, open early. Young leaves very faintly tinged with carmine on lower side only. Leaves hang until very late in the season, medium to small, thin; upper surface dark green, smooth; lower surface pale green, not pubescent; veins indistinct; petiolar sinus deep, medium to narrow, often urn-shaped; basal and lateral sinuses shallow to medium when present; teeth of average depth, rather wide. Flowers fertile, open early; stamens upright.

Fruit colors early but is not edible until after mid-season. Clusters medium to small, of fair length, slender, cylindrical, uniform, usually single-shouldered, compact; peduncle medium to short, intermediate in thickness; pedicel nearly short, very slender, almost smooth; brush tinged with red. Berries small to medium, roundish to slightly oval, dark purplish-black to black, glossy, covered with rather thick blue bloom, adhere well to pedicel, firm. Skin very thin, tough, nearly free from pulp, contains considerable wine-colored pigment, somewhat astringent. Flesh darkish green, very juicy, fine-grained, slightly tough and solid, with some Riparia flavor, spicy, vinous, too tart for dessert use. Seeds adherent, average two in number, intermediate in size, short, blunt, brownish; raphe obscure; chalaza of average size, above center, pear-shaped to long oval, distinct. Must, 93°–98°.

CLOETA.

(Lincecumii, Rupestris, Labrusca, Vinifera.)

1. *Rural N. Y.*, 60:637. 1901. 2. *Am. Pom. Soc. Rpt.*, 1903:83. 3. *Mo. Hort. Soc. Rpt.*, 1904:306.

Cloeta comes from T. V. Munson and is of the same parentage as Captain. Munson says of it:[1] "Probably the best of all American black grapes." But it does not sustain this high standard on the Station grounds nor would it do so, we think, in other parts of the North. Munson further states that it "requires hot, dry weather to acquire high quality" and this explains why it does not succeed in this latitude as it does in Texas.

The variety was produced from seed of America pollinated by R. W. Munson and was introduced by the originator in 1902.

Vine very vigorous, hardy, produces fair to good crops, suceptible to attacks of mildew. Canes long, numerous, covered with considerable blue bloom; tendrils intermittent, bifid. Leaves small to above medium, rather thick. Flowers bloom in mid-season; stamens upright. Fruit ripens after mid-season, does not keep well. Clusters medium to small, not uniform, frequently single-shouldered, intermediate in compactness. Berries medium to small, oval to roundish, black, covered with a fair amount of blue bloom, very persistent, not firm. Skin very thin and tender, contains a large amount of wine-colored pigment. Flesh somewhat tough and solid, sweet at skin to acid at center, spicy, medium to above in quality. The numerous small seeds are usually not notched.

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[1] *Cat.*, 1908:18.

COLERAIN.

(Labrusca.)

1. *Rural N. Y.*, 47:759. 1888. *fig.* 2. *Bush. Cat.*, 1894:105. 3. *Rural N. Y.*, 53:616. 1894. 4. *N. Y. Sta. An. Rpt.*, 14:278. 1895. 5. *N. Y. Sta. An. Rpt.*, 17:528, 548, 554. 1898. 6. *Rural N. Y.*, 58:23. 1899. 7. *Mich. Sta. Bul.*, 169:165. 1899.

Colerain is one of the numerous white seedlings of Concord and one of the few of these seedlings of sufficient merit to be kept in cultivation. It has the characteristic foliage and habit of growth of its parent but is earlier by at least a week, is of much higher quality and lacks somewhat the foxiness of most Labruscas. Colerain is sprightly and vinous and neither seeds nor skins are as objectionable as in the parent variety; the fruit hangs well to the vine and keeps as well as most of the varieties of its class but owing to its tender pulp does not ship well. It is reported to be more or less unproductive in some localities. While Colerain has not attained commercial importance, it is recognized as well worthy a place in home vineyards, and for this reason and because it is one of the best if not the best of the white seedlings of Concord it is given the honor of a color-plate and full description in *The Grapes of New York*.

David Bundy of Colerain, Belmont County, Ohio, produced Colerain from seed of Concord planted in 1880. The variety was soon after introduced by the Colerain Grape Company of Colerain, Ohio.

Vine medium to vigorous, usually hardy, healthy, not always productive. Canes intermediate in length and number, slender, dark reddish-brown; nodes of average size, flattened; internodes medium to below; diaphragm thick; pith rather large; shoots pubescent; tendrils continuous, rather short, bifid.

Leaf-buds small, short, slender, pointed to nearly conical, open moderately late. Young leaves lightly tinged on lower side and along margin of upper side with a faint trace of carmine. Leaves of average size, nearly thick; upper surface light green, dull, moderately smooth; lower surface slightly bronze, downy; veins rather distinct; leaf not lobed, terminus acute; petiolar sinus shallow to medium, usually wide; basal and lateral sinuses very shallow when present; teeth shallow, of average width. Flowers fertile, opening in mid-season or earlier; stamens upright.

Fruit ripens a week or more earlier than Concord, keeps fairly well but does not ship well. Clusters attractive, averaging medium in size and length, somewhat slender, blunt, tapering to nearly cylindrical, irregular, usually strongly shouldered, moderately compact; peduncle medium in length and thickness; pedicel intermediate in length,

inclined to slender, nearly smooth; brush of average length, green. Berries usually below Niagara in size but somewhat variable, roundish to slightly oval, light green, slightly glossy, covered with thin gray bloom, usually rather persistent. Skin unusually thin, tender, adheres to pulp, contains no pigment, slightly astringent. Flesh pale green, translucent, juicy, fine-grained, tender and soft when fully ripe, somewhat foxy, vinous, sweet, good in quality. Seeds separate easily from the pulp, few in number, usually one to three, averaging two, rather small and broad, notched, short to medium, nearly plump, brownish; raphe obscure; chalaza of average size, slightly above center, circular to nearly oval, showing only as a depression.

COLUMBIAN IMPERIAL.

(Labrusca, Riparia.)

1. *Ohio Hort. Soc. Rpt.*, 1893–4:30. 2. *Bush. Cat.*, 1894:105. 3. *Ohio Hort. Soc. Rpt.*, 1894–5: 67, 70. 4. *N. Y. Sta. An. Rpt.*, 18:374, 387, 395. 1890. 5. *Mo. Sta. Bul.*, 46:38, 43, 44, 45, 49. 1899. 6. *Mich. Sta. Bul.*, 169:166, 169. 1899. 7. *Mo. Hort. Soc. Rpt.*, 1899:57. 8. *Ga. Sta. Bul.*, 53:42. 1901.

Columbian (3, 6). *Imperial* (3). Jumbo (1). *Jumbo* (2, 3).

Columbian Imperial is a showy, reddish-black, Labrusca-Riparia hybrid chiefly remarkable for the great size of its berries; though the vine is so exceptionally healthy and vigorous as to give it prominence for these characters. The variety has remarkably thick, leathery leaves which seem almost proof against either insects or fungi. The quality of the fruit, however, is very inferior and the clusters are uneven as to the number of berries and these shell off readily. The only possible value of the variety is for exhibition purposes and for breeding to secure the desirable characters named above. Columbian Imperial is a frequent adornment of the salesbook of the fruit tree agents and the panegyrics heaped upon it by misinformed or unscrupulous salesmen have given it a rather wide distribution in the gardens of the amateur where it has no place whatever.

The parentage of Columbian Imperial is unknown. The fruit was originated by J. S. McKinley, Morgan, Orient P. O., Ohio, in 1885. It was introduced by the Columbian Grape Company, of Kingston, Ohio, under the name Columbian, also by J. R. Johnson of Dallas, Texas, under the name Columbian Imperial. Supposed by many to be of Labrusca-Riparia blood. The Labrusca shows plainly; the Riparia little, if at all.

Vine vigorous to very vigorous, healthy, hardy, variable in productiveness. Canes long, numerous, thick to medium, dark reddish-brown, unusually heavily pubescent and spiny; tendrils continuous, long, bifid.

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Leaves healthy, variable in size, green, very thick; lower surface of young leaves pale green shading into bronze on older leaves with little, if any, pubescence. Flowers, strongly self-fertile; upright stamens. Fruit ripens late. Clusters medium in size, sometimes shouldered, and of average compactness. Berries large, roundish to slightly oval, dull reddish-black covered with thin lilac or faint blue bloom, not very persistent, firm. Skin thick, tough, contains no pigment. Flesh moderately juicy, tough, nearly sweet at skin to decidedly acid at center, with no pronounced aroma, fair to good in quality. Seeds adhere to the pulp, large to medium, plump, broad to medium, intermediate in length, rather blunt.

CONCORD.

(Labrusca.)

1. *Mag. Hort.*, **18**:490, 522. 1852. 2. *Ib.*, **19**:524, 542. 1853. 3. *Horticulturist*, **9**:124, 188, 236. 399, 515. 1854. 4. *Mag. Hort.*, **20**:63, *fig.*, 431, 553. 1854. 5. *Am. Pom. Soc. Cat.*, **1854**. 6. *Ib.*, **1858**:233. 7. Grant, **1864**:7, 12. 8. *Gar. Mon.*, **11**:39. 1869. 9. *Mich. Pom. Soc. Rpt.*, **1872**:47. 10. *Bush. Cat.*, **1883**:83, 84, *fig.*, 147. 11. *Mo. Hort. Soc. Rpt.*, **1891**:335. 12. *Meehan's Mon.*, **4**:47. 1894. 13. *N. Y. Sta. An. Rpt.*, **17**:528, 540, 543, 544, 548, 552. 1898. 14. *Ev. Nat. Fruits*, **1898**:72. 15. *Mo. Hort. Soc. Rpt.*, **1900**:360. 16. *Traité gen. de vit.*, **6**:178. 1903.

Bull's Seedling (1).

The Concord is known by all. The most widely grown of the grapes of this continent, it also represents the dominant type of our native species and with its offspring, pure-bred and cross-bred, furnishes seventy-five per ct. or more of the grapes of eastern America. In New York, approximately seventy-five per ct. of all the grapes grown are Concords alone. The preeminently meritorious character of Concord, which has enabled it to take first place in American viticulture, is the elasticity of its constitution whereby it adapts itself to varying conditions; thus the Concord is grown with more or less profit in every grape-growing State in the Union and to an extent not possible with any other grape. It succeeds on a greater number of soils than any other variety. In the Chautauqua grape region there are six distinct types of soil upon which grapes are grown and the Concord is the leading grape on each of them.

A second character which commends Concord as a commercial variety is its high degree of fruitfulness, as it gives large crops year in and year out. Added to the above points of superiority are hardiness; ability to withstand the ravages of both diseases and insects; comparative earliness and therefore certainty of maturity in northern regions; fair size of bunch and berry, good color, and an abundance of bloom, making a most handsome

grape. The Concord leaves out and blossoms somewhat late in the spring and does not therefore often suffer from spring frosts and the fruit is not easily injured by late frosts and hangs well on the vine.

The Concord is not, however, without faults. Its quality is not high, the grapes lack richness, delicacy of flavor and aroma, and have a foxy taste disagreeable to many; on the other hand, the fruit is sprightly and refreshing and does not cloy the appetite as do richer grapes. The seeds and skin of Concord are objectionable, the seeds being large and abundant and difficult to separate from the flesh and the skin is tough and unpleasantly astringent. The Concord does not keep nor ship well as compared with grapes having Vinifera blood and it rapidly loses flavor after ripening; the skin is inclined to crack and the berries to shell from the stems after picking. Concord is but slightly resistant to phylloxera and in calcareous soils is subject to chlorosis. It requires a rich soil and thrives best on a virgin soil; thus, in the Chautauqua region of this State, much concern is now felt because of the failing vineyards, most of which should not as yet have reached their prime. While Concord is grown in the South, it is essentially a northern grape, becoming susceptible to fungi in southern climates and suffering from phylloxera in dry, warm soils.

Concord is a table grape and, to use an oft quoted expression coined by Horace Greeley, it is "the grape for the millions." It can be produced so cheaply that no other grape can compete with it in the markets. The dominance of Concord is not wholly desirable for viticulture, as by keeping out better varieties, the consumer is prevented from obtaining grapes high in quality; and by giving the grower a feeling of sufficiency in having this sort, other varieties do not receive the consideration they deserve. The variety is used somewhat for making red wines and a white wine as a base for champagne but it is a poor wine grape, as much sugar must be added to attain the amount of alcohol necessary for a good wine and the foxy taste is not a pleasant flavor. Grape juice is made almost entirely from Concords and during the past few years many carloads of grapes have been used in the Chautauqua region for this purpose.

The botanical characters of Concord indicate that it is a pure-bred Labrusca; thus the seed with obscure raphe and chalaza, the pubescence on the under surface of the leaf, the flesh characters of the fruit, the con-

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tinuous tendrils, the diaphragm, all belong to *Vitis labrusca*. There are those, however, who maintain that it is possibly a Labrusca-Vinifera hybrid, basing their claim upon the upright stamens, the characters of some of the seedlings, and the opinion expressed by Bull that a Catawba vine growing near by had fertilized the seed from which Concord was raised.

Concord is a virile variety, having begotten a great number of valuable offspring, both as pure-breeds and as cross-breeds. To these it has seemingly transmitted its characters to a high degree. The reader who takes the pains to look them up will find that many of these, even of the pure-breeds, are white and that they are usually of higher quality than the parent, indicating a white ancestor of Concord in which high quality was possibly correlated with the light color.

The seed of a wild grape was planted in the fall of 1843 by E. W. Bull[1] of Concord, Massachusetts, from which fruit was borne in 1849. The wild grape from which the seed came had been transplanted from beside a field fence to the garden in which there was at least another grape, the Catawba, and the wild vine was open to cross-pollination. One of these seedlings was named Concord and the variety was exhibited before the Massachusetts Horticultural Society in the fall of 1852. The new grape was introduced in the spring of 1854 by Hovey & Co., of Boston. From the time of its introduction the growth of this variety in popularity was phenomenal. In 1854, the year of its introduction, it was placed on the grape list of the American Pomological Society fruit catalog as one of the "new varieties which promise well." In 1858 it was placed on the regular list of recommended sorts where it has since been retained. Husmann states, in the winter of 1855, that he secured buds at Hermann, Missouri, from Soulard

[1] Ephraim W. Bull was born in Concord, Massachusetts, in 1805 and died in 1895. He will long be remembered by grape-growers as the originator and introducer of the Concord grape, the history of which is given in the above account of that variety. Bull grew many other seedlings, none of which attained a reputation among growers unless it be Cottage. Ephraim Bull's ninety years were spent in the quiet of his Concord home and he would have remained unknown by others than his neighbors, who honored and loved him, had it not been for his fortunate discovery of the Concord grape, which must always give him a place in the history of American grape culture. The grape which has added immensely to the wealth of a nation, brought its originator scarcely a year's competence. As a partial recompense for his great service to horticulture and to the nation, the memory of Ephraim W. Bull should live long.

of Galena, Illinois. In other words, its culture had spread halfway across the continent in the brief period of a year. Before 1860, vineyards of Concord had been planted in Chautauqua County, this State. In 1865 it was awarded a prize by the American Institute known as the Greeley prize, from its donor, Horace Greeley, as the best grape for general cultivation.

Vine vigorous to very vigorous, hardy, healthy, usually productive of heavy crops. Canes above medium length, of average number, above mean thickness, rather dark reddish-brown to brown; nodes enlarged, flattened; internodes medium to long; diaphragm rather thick; pith large to medium; shoots pubescent; tendrils continuous, long, bifid, sometimes trifid.

Leaf-buds medium to nearly large, short, below average thickness, conical to pointed, open in mid-season. Young leaves lightly tinged on lower side and along margin of upper side, prevailing color rose-carmine. Leaves large to medium, thick; upper surface dark green, slightly glossy, rather smooth; lower surface light bronze, heavily pubescent; veins distinct; lobes three when present, terminal lobe acute; petiolar sinus variable averaging medium in depth and width; basal sinus usually lacking; lateral sinus obscure and frequently notched; teeth shallow, medium to narrow. Flowers fertile, open in mid-season or earlier; stamens upright.

Fruit ripens about mid-season, keeps from one to two months. Clusters rather uniform, large to medium, intermediate in length, wide, broadly tapering, usually single-shouldered, sometimes double-shouldered, medium to rather compact; peduncle short to medium, thick; pedicel of average length, thick, nearly smooth; brush intermediate in length, pale green. Berries medium to large, roundish, slightly glossy, black covered with abundant blue bloom, not always persistent, firm. Skin of average thickness, moderately tough, slightly adherent to pulp, contains a small amount of wine-colored pigment, somewhat astringent. Flesh pale green, translucent, juicy, rather fine-grained, somewhat tough and solid, slightly foxy, sweet at skin, inclined to tartness next the seeds, good in quality. Seeds rather adherent, one to four in number, average three, nearly large, broad, distinctly notched, plump, blunt, brownish; raphe obscure; chalaza of fair size, slightly above center, oval, nearly obscure. Must 70°–80°.

COTTAGE.

(Labrusca.)

1. *Am. Jour. Hort.*, 4:327, 334. 1868. 2. *Horticulturist*, 26:22. 1871. 3. *Am. Pom. Soc. Cat.*, 1879. 4. *Am. Pom. Soc. Rpt.*, 1881:36. 5. *Rural N. Y.*, 52:655. 1893. 6. *Ill. Sta. Bul.*, 28:253. 1893. 7. *Bush. Cat.*, 1894:108. 8. *Ill. Hort. Soc. Rpt.*, 1895:131. 9. *N. Y. Sta. An. Rpt.*, 17:528, 545, 547, 554. 1898. 10. *Mich. Sta. Bul.*, 169:169. 1899.

In vine and fruit Cottage greatly resembles its parent, Concord, having, however, remarkably large, thick, leathery leaves well shown in the color-

COTTAGE

plate. It is noted, too, for its strong, branching root system. With good foliage and good roots it is not surprising that it is a vigorous, thrifty grower — if anything surpassing its parent in vigor of growth. The canes are so rough as to be almost spiny indicating, seemingly, outbursts of growth-force. The Cottage is of better quality than its parent having far less foxiness and a richer, more delicate flavor. It is given credit, too, of being a better shipper and a better keeper and is from one to two weeks earlier. Its good qualities are offset, however, by the fact that it lacks in soil adaptability, is comparatively unproductive, and ripens unevenly. It blooms much earlier than Concord. Cottage is recommended as an early grape of the Concord type for the garden and a standard variety for northern localities. The variety is widely distributed in varietal vineyards.

Cottage is another of E. W. Bull's seedlings, having been produced by him from seed of Concord. It was introduced in 1869 and in 1879 it was placed on the grape list of the American Pomological Society fruit catalog, where it has since been retained.

Vine vigorous, healthy, hardy, produces average crops. Canes often rough and hairy, long to medium, numerous, of fair thickness, rather dark brown, nodes slightly enlarged, not usually flattened; internodes intermediate in length; diaphragm thinnish; pith of average size; shoots very pubescent; tendrils continuous, of mean length, usually bifid.

Leaf-buds small to medium, short, of fair thickness, conical to pointed, open moderately early. Young leaves tinged on lower side and faintly at the margin with red, making the prevailing color pale green with light carmine tinge. Leaves large, thick; upper surface dark green, glossy, smooth to slightly rugose; lower surface tinged with heavy bronze, with some pubescence; veins distinct; leaf usually not lobed, with terminus acute to acuminate; petiolar sinus usually deep and wide; teeth shallow, wide. Flowers fertile, open medium early; stamens upright.

Fruit ripens one or two weeks earlier than Concord, does not keep well. Clusters above medium to small, below average length, moderately broad, cylindrical to slightly tapering, sometimes single-shouldered, rather compact; pedunele somewhat long, intermediate in size; pedicel short, thick, covered with few, inconspicuous, small warts, wide at point of attachment to berry; brush dark red. Berries of average size, roundish, dull black, not glossy, covered with heavy blue bloom, drop badly from pedicel, firm. Skin rather thick, somewhat tender, slightly adherent to pulp, contains considerable dark purplish-red pigment, slightly astringent. Flesh juicy, tough, rather solid, foxy, agree-

ably sweet next the skin, tart at seeds, good to medium. Seeds separate somewhat readily from pulp, numerous, one to four, often four, above medium in size, rather broad, intermediate in length, blunt, light brown; raphe does not show; chalaza rather large, usually at center, irregularly circular, obscure.

CREVELING.

(Labrusca, Vinifera?)

1. *Am. Pom. Soc. Rpt.*, 1858:225. 2. *Ib.*, 1860:79. 3. *Horticulturist*, 15:538. 1860. *fig.* 4. *Mag. Hort.*, 27:103. 1861. 5. *Horticulturist*, 17:141. 1862. 6. *Mag. Hort.*, 29:72. 1863. 7. Mead, 1867:163. 8. *Am. Pom. Soc. Cat.*, 1867:45. 9. *Am. Jour. Hort.*, 4:60. 1868. 10. Downing, 1869: 536. 11. *Am. Jour. Hort.*, 8:143. 1870. 12. *Gar. Mon.*, 13:214, 279. 1871. 13. *Bush. Cat.*, 1883:90. 14. *N. Y. Sta. An. Rpt.*, 17:528, 540, 544, 548, 554. 1898. 15. *Ib.*, 18:374, 387, 395. 1899. 16. *Kan. Sta. Bul.*, 110:240. 1902.

Bloom (2, 3, 5, 13). *Bloomburg* (10). CATAWISSA (5). *Catawissa* (2, 6, 13). *Catawissa Bloom* (10). *Columbia Bloom* (2, 4). *Columbia County* (10). LAURA BEVERLY (9, 12). *Laura Beverly?* (10).

Creveling was long a favorite early black grape for the garden, where, if planted in good soil and kept well trained, it produces fine clusters of large, handsome, very good grapes of the Isabella type. Under any but the best of care, however, it is unproductive and sets loose, straggling bunches. The wood is soft, long-jointed, reddish in color, with a large pith and producing but few laterals. It is markedly self-sterile.

The origin of the Creveling is uncertain. It was first introduced to the public about 1857 by F. F. Merceron of Catawissa, Pennsylvania. It is said to have been in cultivation in Columbia County, Pennsylvania, some years previous to the date given. The name Creveling came from a family of that name, who cultivated the variety and may possibly have originated it. It was placed upon the grape list of the American Pomological Society fruit catalog in 1867 and dropped from their list in 1899. It is still widely cultivated in varietal vineyards.

Vine vigorous, not quite hardy, usually not very productive. Canes long, above medium in number, rather thick, dark reddish-brown; nodes slightly enlarged, flattened; internodes medium to long; diaphragm thick; pith large; shoots glabrous; tendrils usually continuous, long, trifid to bifid.

Leaf-buds rather large, short, thick, obtuse, open in mid-season. Young leaves tinged on upper and lower sides with rose-carmine. Leaves below medium to large, thick; upper surface dark green, dull, slightly rugose; lower surface pale green, rather pubescent; veins somewhat prominent; lobes usually three, sometimes obscurely five,

CREVELING

terminal lobe acute to blunt; petiolar sinus deep to narrow, closed and sometimes overlapping; basal sinus very shallow when present; lateral sinus rather shallow, narrow; teeth shallow, of average width. Flowers sometimes on plan of six, sterile, open in midseason or earlier; stamens reflexed.

Fruit ripens a few days later than Hartford, does not keep well. Clusters resemble Isabella in general appearance, good size, medium to long, rather broad, irregularly tapering, usually single-shouldered the shoulder often being connected to the cluster by a long stem, loose; peduncle long, rather slender, often with a distinct reddish tinge; pedicel variable in length, thick, usually with no warts, wide at point of attachment to berry; brush intermediate in length, thick, dark wine-color. Berries medium to large, oval, dull black, covered with heavy blue bloom, persistent, rather firm. Skin thick, tough, adheres considerably to the pulp, with a moderate amount of wine-colored pigment, astringent. Flesh pale green, translucent, juicy, very stringy, tender, coarse, somewhat foxy, sweet at skin to tart at center, good in quality. Seeds separate rather easily, one to five in number, average two or three, above medium in size, broad, slightly notched, intermediate in length, blunt, light brown; raphe shows as a narrow groove; chalaza of fair size, at center or slightly above, oval, obscure.

CROTON.

(Vinifera, Labrusca, Bourquiniana.)

1. *Am. Jour. Hort.*, 5:223, 224. 1869. *fig.* 2. *Am. Hort. An.*, 1870:91, 92. *fig.* 3. *Horticulturist*, 25:275. 1870. 4. *Am. Pom. Soc. Cat.*, 1871:16. 5. *Mich. Pom. Soc. Rpt.*, 1872:546. *fig.* 6. *Am. Pom. Soc. Rpt.*, 1883:57. 7. *Bush. Cat.*, 1883:87. *fig.* 8. *N. Y. Sta. An. Rpt.*, 17:528, 545, 547, 554. 1898. 9. *Ga. Sta. Bul.*, 53:42, 51. 1901.

The Croton is a feast both to the eye and the palate. The accompanying color-plate does not do it justice as grown at its best, as it shows a loose, straggling bunch, a characteristic of the variety only when poorly grown. Unfortunately it has the fault of being difficult to grow well, being adapted to but few soils and proving unfruitful, weak in growth, precariously tender, and somewhat subject to mildew and rot in unfavorable situations. But when well grown the consensus of opinion among viticulturists is that it has few superiors among white grapes. It has a sweet, delicate Vinifera flavor, with melting flesh which readily separates from the few seeds. The fruit hangs on the vines until frost, and keeps well into the winter. The Croton is among green grapes what its parent, the Delaware, is among red grapes. In spite of its high quality it has never become widely distributed, failing utterly as a commercial variety, quality counting

for but little in grape markets. If this delicious fruit is to be saved to cultivation it must be by the hands of the amateur.

Croton came from Stephen W. Underhill[1] of Croton Point, New York, from seed of Delaware pollinated by Chasselas de Fontainbleau. The seed was planted in the spring of 1863 and the vine fruited for the first time in 1865. The grape was first exhibited at the Massachusetts Horticultural Society meeting in 1868. It was placed on the grape list of the American Pomological Society fruit catalog in 1871 but was dropped in 1883, chiefly on account of its susceptibility to fungal diseases.

Vine medium to vigorous, often somewhat tender, usually productive, subject to disease in unfavorable locations. Canes long, numerous, thick, rather dark reddish-brown; nodes enlarged, usually not flattened; internodes medium to short; diaphragm very thick; pith large; shoots glabrous; tendrils intermittent, long, bifid.

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[1] No one family has furnished so many members who have been prominent in American grape-growing as the Underhills. The first of this remarkable family, Robert Underhill, was born in Yorktown, Westchester County, New York, in 1761. During his early life he appears to have been engaged in various enterprises. At one time he was part owner and conductor of a flouring mill at the head of navigation on the Croton River; later he sold his interest in this business and in 1804 removed to Croton Point, which he had previously bought. Here, during the War of 1812, the supply of watermelons from the South being cut off, he planted eighty acres of melons, and it is said that as many as six vessels were lying off Croton Point at one time waiting for the melons to mature. Among other of his ventures was the growing of castor beans, and toward the end of his life he became interested in viticulture. An account of his operations cultivating grapes is given in the first part of this work. Robert Underhill died at Croton Point in 1829. After his death his two sons, William Alexander Underhill and Robert T. Underhill, bought from their father's estate the two hundred and fifty acres comprising Croton Point. Their holdings were not in common, William A. Underhill having about one hundred and sixty-five acres and his brother the balance.

R. T. Underhill was born on the Croton River in 1802 and died in 1871 at Croton Point. William A. Underhill was born at the same place as his brother in 1804, and died suddenly while on a trip to New York City in 1873. The first three Underhills were pioneer vineyardists in this State, and were men of great enterprise and initiative, contributing much to American viticulture by precept and example; but none of them was an originator of new varieties.

Stephen W. Underhill, son of William A. Underhill, was born at Croton Point in 1837. In his boyhood he became familiar with the grape-growing operations of his father and uncle, and about 1860 became interested in hybridizing as a means of originating new varieties. Most of his work was done between 1860 and 1870. He originated Black Defiance, Black Eagle, Croton, Irving, Senasqua and many other named and unnamed sorts. Of his varieties it may be said that they generally show too many Vinifera weaknesses for profitable commercial sorts. S. W. Underhill is still living at Croton-on-Hudson, a short distance from Croton Point, the scene of the labors of three generations of the Underhill family. Since the death of his father, in 1873, he has devoted himself almost exclusively to brick-making, an occupation in which his father had been interested.

CROTON

Leaf-buds large, prominent, long, of average thickness, conical, open late. Young leaves tinged on lower side and at margin of upper side with faint carmine. Foliage remains until late in the season; leaves of medium size, intermediate in thickness; upper surface light green, dull, nearly smooth to rugose; lower surface pale green, slightly cobwebby or hairy; veins indistinct; lobes five in number, terminal lobe blunt to acute; basal sinus of average depth, rather narrow; lateral sinus inclined to deep and nearly narrow; petiolar sinus medium deep, narrow, often closed and overlapping; teeth inclined to shallow, wide. Flowers fertile, open late; stamens upright.

Fruit ripens in mid-season or later, keeps fairly well. Clusters not uniform, very large to medium, longish, rather slender, irregularly tapering, often with an unusually heavy single shoulder, very loose to medium; peduncle long, thick; pedicel somewhat long, thick, covered with few, small, inconspicuous warts; brush intermediate in length, greenish. Berries irregular in size averaging about medium, roundish to slightly elongated, light green, changing to yellowish-green, covered with thin gray bloom, persistent, slightly soft. Skin thin, rather tough, adheres very slightly to the pulp, contains no pigment. Flesh green, somewhat transparent, very juicy, melting, vinous, pleasant flavor, agreeably sweet, good to very good in quality. Seeds separate very easily from the flesh, one to three, above medium in size, slightly elongated, fair breadth, notched, rather sharply pointed, light brown; raphe obscure; chalaza small, above center, irregul -ly circular to oval, indistinct.

CUNNINGHAM.

(Bourquiniana.)

1. Prince, 1830:191. 2. *U. S. Pat. Off. Rpt.*, 1845:939. 3. *Gar. Mon.*, 3:83. 1861. 4. *Am. Jour. Hort.*, 3:301. 1868. 5. *Grape Cult.*, 1:34, 75. 1869. 6. *Bush. Cat.*, 1883:87, 88. *fig.* 7. *Texas Farm and Ranch*, Feb. 8, 1896:11. 8. *Tex. Sta. Bul.*, 48:1149, 1155. 1898. 9. *Mo. Sta. Bul.*, 46:38, 43, 45, 46, 50, 54. 1899. 10. *Traité gen. de vit.*, 6:268. 1903.

Long (4, 6, 7, 9). *Long No. 2* (9). *Prince Edward* (1).

The Cunningham is not known in New York and in fact has been cultivated but little in America, but in France at one time it was one of the best known American grapes, both as a direct producer and as a stock for European varieties. It is not now largely grown in France, however, having been superseded by better American varieties for the uses for which it was formerly cultivated. It was much sought for by the French as a stock for large Vinifera cions, the size of the vine giving an opportunity for making a good graft. In the South, Cunningham is not largely grown as there are several other varieties of its class superior to it in quality of fruit and in vine characters as well. It seems everywhere to have been an exceedingly capricious grower and very particular as to soil and climate.

It is said to make a deep yellow wine of very good quality. It has little or no value as a table grape.

Cunningham originated in the garden of Jacob Cunningham of Prince Edward County, Virginia, about the year 1812. Cuttings of this vine were sent by Dr. D. N. Norton of Richmond to Prince in 1829. Prince introduced it to the public. Its botanical characters mark it as an offshoot of the Herbemont group of Bourquiniana.

The following description is a compilation from several sources:

Vine very vigorous, spreading, rather productive, somewhat suceptible to mildew. Canes large and long, with stiff reddish hairs at base; shoots showing considerable bloom; tendrils intermittent, usually trifid. Leaves large, rather thick, roundish, entire or slightly lobed; smooth and dark green above, yellowish-green below and slightly pubescent; petiolar sinus narrow, frequently overlapping. Clusters of medium size, long, sometimes shouldered, very compact; peduncle short, strong; pedicel long, slender. Berries small, purplish-black with thin, grayish bloom. Skin thin, tough with considerable underlying pigment. Flesh tender, juicy, sprightly or somewhat acidly sweet. Seeds two to five, rather oval: beak short; chalaza distinct; raphe showing as a ridge.

CYNTHIANA.

(Aestivalis, Labrusca.)

1. *U. S. D. A. Rpt.*, 1863:548. 2. Husmann, 1866:103. 3. Ib., 1866:104. 4. *Gar. Mon.*, 11:149. 1869. 5. *Grape Cult.*, 1:20, 239. 1869. 6. *Ib.*, 3:2. 1871. 7. *Am. Pom. Soc. Cat.*, 1881:24. 8. *Bush. Cat.*, 1883:88. *fig.* 9. *Mo. Hort. Soc. Rpt.*, 1891:127, 131. 10. *Ill. Sta. Bul.*, 28:253. 1893. 11. *Mo. Sta. Bul.*, 46:38, 43, 45, 46, 50. 1899. 12. *Kan. Sta. Bul.*, 110:246. 1902. 13. *Traité gen. de vit.*, 6:274. 1903.

Arkansas (3). *Arkansas* (8). *Norton* (13). *Norton Virginia* (13). *Norton's Virginia Seedling* (13). *Red River* (2, 5, 6, 8, 13). *Vitis Nortoni* (13).

Cynthiana is another southern grape impossible to grow in the North and therefore of but general interest for this work. There has long been a heated controversy as to whether this variety differs from Norton. The botanical differences between the two varieties are not greater than might be attributed to environment, soil, climate and culture; but side by side the two grapes ripen at different times, and the quality of the fruit, and more particularly of the wine, is such that the varieties must be considered as distinct. The distinction should be maintained for Cynthiana is the better grape of the two. It has been much grown in France for its intrinsic value and in the reconstruction of vineyards destroyed by phylloxera.

CYNTHIANA

As the history given below shows, the variety is an old one but it, with Norton, was condemned by the early vineyardists because it could be propagated from cuttings only with the greatest difficulty. Like most of its species, Cynthiana is somewhat particular as to soil and location, preferring sandy or gravelly loams and not thriving on clays or limestones. While very resistant to phylloxera, it is not now much used as a resistant stock because of the superiority of varieties of Rupestris and because it is not easily propagated. It is very resistant to cryptogamic diseases, mildew, black-rot and anthracnose, and is a strong, vigorous grower. Its cycle of vegetation is long, the buds bursting forth early and the fruit maturing very late. It has no value as a table grape but according to the *Bushberg Catalogue*[1] it is the best American grape for red wine. So, too, according to Viala,[2] the wine from Cynthiana is the best of all the red wines produced from American vines. It is said by French wine-makers[3] to contain "an excess of all the elements which constitute the best ordinary wines, color, tannin, acidity, and bouquet," and therefore to make a splendid base for blending with wine from varieties lacking in the above elements.

Cynthiana was received, some time in the fifties by Prince of Flushing, Long Island, from Arkansas where it is said to have been found growing in the woods. It was sent by Prince to Husmann at Hermann, Missouri, where it did so well and was so highly spoken of by Husmann and his neighbors that it soon became known to grape-growers. It was placed upon the grape list of the American Pomological Society fruit catalog in 1881, where it still remains. Like Norton, Cynthiana is often considered pure Aestivalis, although a strain of some other blood, probably Labrusca, is apparent. Because of the similarity of this variety and Norton the one is often grown as the other.

Vine vigorous, healthy, hardy, usually a good yielder. Canes medium to nearly long, numerous, of average size, dark brown to reddish-brown, sometimes with faint ash-gray tinge, surface covered with thick blue bloom; nodes enlarged, flattened; internodes short to medium; diaphragm rather thin; pith of medium size; shoots slightly glabrous; tendrils intermittent to continuous, above medium in length, bifid.

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[1] *Bush. Cat.*, 1883:89.

[2] *Traité gen. de vit.*, 6:278. 1903.

[3] *Ib.*, p. 279.

Leaf-buds small, short, slender, pointed to conical. Leaves variable in size, thick, firm; upper surface dark green, dull, rugose; lower surface slightly tinged with blue, faintly pubescent, cobwebby; veins distinct; lobes variable in number, terminal lobe acute; petiolar sinus deep, narrow, closed and sometimes overlapping; basal sinus shallow; lateral sinus rather shallow and narrow; teeth shallow, of average width; stamens upright.

Fruit ripens very late and keeps well. Clusters medium to small, rather long, intermediate in breadth, tapering to cylindrical, not very uniform, often single-shouldered, compact; peduncle above medium length, small; pedicel rather short and slender, covered with numerous warts, enlarged at point of attachment to berry; brush short, thick, wine-colored. Berries small, roundish, black, covered with a moderate amount of blue bloom, persistent, firm. Skin thin, tough, rather adherent to the pulp, contains a slight amount of purple pigment, astringent. Flesh darkish green, translucent, juicy, tough and solid, spicy, rather tart, poor in quality as a dessert grape. Seeds separate with difficulty from the pulp, one to six, average three, small, of mean breadth, short, blunt, dark brown; raphe distinct, cord-like; chalaza small, slightly above center, circular, distinct. Must 98°–118°

DAISY.

(Labrusca, Vinifera.)

1. *Kan. Hort. Soc. Rpt.*, 1886:187. 2. *N. Y. Sta. An. Rpt.*, 10:495. 1891. 3. *Ib.*, 13:602. 1894. 4. *Bush. Cat.*, 1894:111. 5. *N. Y. Sta. An. Rpt.*, 17:528, 548, 554. 1898.

Daisy is an unimportant seedling of Goethe. The only reason for its distribution was its delicate, spicy, pleasant flavor. It is probably not worth perpetuating.

Dr. J. Stayman, Leavenworth, Kansas, is supposed to have originated Daisy from seed of Goethe. On account of the fruit characters, Bush questions the parentage but as it grows at this Station the reputed parentage appears to be quite probably correct.

Vine intermediate in vigor, not hardy nor productive, an uncertain bearer. Tendrils continuous, bifid to sometimes trifid. Leaves small to medium, light green; lower surface slightly pubescent. Flowers nearly self-sterile, open in mid-season; stamens upright. Fruit ripens with Concord or soon after, does not keep well. Clusters of medium size, rather loose. Berries medium to small, distinctly oval, somewhat darker red than Agawam, covered with thin lilac bloom, persistent, not firm. Flesh soft and tender, vinous, sweet, of pleasant flavor, good in quality. Seeds few, medium in length, usually with a slightly enlarged neck; chalaza above center, often with radiating ridges.

DELAWARE.

(Labrusca, Bourquiniana, Vinifera.)

orticulturist, 8:492. 1853. *fig.* 2. *Ib.*, 9:98. 1854. 3. *Am. Pom. Soc. Cat.*, 1856:214. 4. *Horticulturist*, 12:562. 1857. 5. Downing, 1857:336. *fig.* 6. *Horticulturist*, 13:58, 179. 1858. 7. *Am. Pom. Soc. Cat.*, 1858:233. 8. *Am. Pom. Soc. Rpt.*, 1858:65. 9. *Gar. Mon.*, 1:75, 164. 1859. 10. *Ib.*, 2:13, 26, 117, 176. 1860. 11. *Horticulturist*, 16:16, 21, 33, 119. 1861. 12. Fuller, 1867:221. 13. *Mich. Pom. Soc. Rpt.*, 1872:48. 14. *Ib.*, 1873:64. 15. *Ohio Hort. Soc. Rpt.*, 1882–3:28. 16. *Bush. Cat.*, 1883:91. *fig.* 17. *Am. Hort. Soc. Rpt.*, 1885:139. 18. *Amer. Gard.*, 12:584. 1891. 19. *Ill. Sta. Bul.*, 28:259. 1893. 20. *N. Y. Sta. An. Rpt.*, 15:430, 431, 432, 433. 1896. 21. *Ib.*, 17:528, 540, 543, 544, 545, 547, 554. 1898. 22. *Amer. Gard.*, 20:622. 1899. 23. *Mich. Sta. Bul.*, 169: 169. 1899. 24. *Amer. Gard.*, 22:481. 1901. 25. *Traité gen. de vit.*, 6:186. 1903.

French Grape (10, 14). *Gray Delaware* (25). *Heath* (5). *Italian wine grape* (5, 8, 13, 14, 16). *Ladies Choice* (8, 11). *Powell* (1, 14). *Red Riesling*, incorr. (5). *Rose Colored Delaware* (25). *Ruff* (9, 14). *Traminer*, incorr. (5). *Wine Grape* (11).

Delaware is the American grape *par excellence*. Its introduction raised the standard of quality in our viticulture to that of the Old World, for there is no variety of *Vitis vinifera* more richly or more delicately flavored or with a more agreeable aroma than the Delaware. This variety is rightly used wherever American grapes are grown as the standard whereby to gauge the quality of other grapes. Added to high quality it is endowed with a constitution which enables it to withstand climatic conditions to which all but the most hardy varieties will succumb, and so elastic as to adapt it to many soils and conditions, and to bear under most situations an abundant crop. All of this makes it, next to the Concord, the most popular grape for garden, vineyard and wine-press, now grown in the United States. As with the Concord, its introduction gave American grape-growing a great impetus and it is a question whether or not, with its high quality, it has not had a more beneficial effect on the viticulture of the country than the Concord.

Beside the qualities named above for the Delaware, it matures sufficiently early to make its crops certain, is attractive in appearance, keeps well on the vine and in the package, ships well and is more immune than other commercial varieties to black-rot. Its faults are: The small size of the vine, slowness of growth, susceptibility of the foliage to mildew, its capriciousness in certain soils, and the small size of the berries. The first two faults make it necessary to plant the vines more closely than other commercial varieties stand. It succeeds best in deep, rich, well-drained,

warm soils but even on these it must receive good cultivation, close pruning, and in some cases the fruit must be thinned. It is, too, a necessity, where mildew is abundant, to spray with bordeaux mixture which keeps the disease well in check. Birds are very fond of this variety and it suffers in particular from the depredations of robins.

Delaware is the best American table grape and as such commands a premium in all of the markets, selling oftentimes for double the price of Concord. It is also much sought for by wine-makers both for Delaware wine and for blending in making champagne or other wines of high quality. It is grown North and South and westward to the Rocky Mountains, and is now proving especially profitable in many southern locations as an early grape to ship to northern markets. The Delaware is an especially desirable grape to cultivate in small gardens because of its delicious and handsome fruit, its compact habit of growth, and when in health, its ample and lustrous green, delicately formed leaves which make it one of the most ornamental of the grapes.[1]

Delaware is the parent of an interesting but not particularly valuable progeny; none of the pure-bred offspring nearly equal the parent though many of them inherit its fine color and high quality. Among its cross-bred offspring are some notable varieties, all of which are described in their proper places in this work. An interesting fact regarding the pure-bred progeny of Delaware is that, so far as we have records, it seems to have given very few black grapes though there are often white or rose-colored seedlings among them. Even in its cross-bred offspring, red, or some tint of it greatly predominates, indicating power in the transmission of color and suggesting the value of this variety in breeding red grapes.

The Delaware grape was first brought to notice by Abram Thompson, editor of the *Delaware Gazette* of Delaware, Ohio. In the summer of 1849

[1] The grape vine in the vineyard is not ornamental, but only because its beauty is marred by the formal shapes in which it must be trained to meet the purposes of the cultivator. But as a festoon for an arbor, or for hiding a neglected building, for the porch of the farmhouse, or for any place where a bold or picturesque effect is wanted, or for giving an expression of strength, no vine surpasses some of the varieties of our native grapes. Properly planted they are not only beautiful in themselves but attractive through their suggestiveness. To sit under one's own vine and fig tree is the ancient idea of a life of peace, contentment and security; and this association with the patriarchal use of the vine is one of the charms of the grape.

DELAWARE

he saw fruit of this variety which had been brought into town from one of the neighboring farms. An investigation disclosed that the variety was being raised on the farms of a Mr. Warford and of a Mr. Heath, near the banks of the Scioto River, a few miles from the town of Delaware, and that Warford had brought the variety from the State of New Jersey more than twenty years before. It was known in this neighborhood under the name of Heath, or Powell. Thompson sent fruit of the variety to A. J. Downing who gave it the name Delaware, after the town from which the samples had been sent. Thompson also brought it to the notice of the Ohio Pomological Society in the autumn of 1851. It was found that the Delaware vines secured by Warford could be traced back to the garden of Paul H. Provost, a Swiss of Frenchtown, Kingswood Township, Hunterdon County, New Jersey. Provost, at this time, was dead, and definite information was very difficult to secure as to where he had obtained his vines. One account was that they had been received from a brother residing in Italy, and in deference to this story, the variety was locally known as the Italian wine grape. Another story was to the effect that they had been brought to Provost's place by a German who had been in this country only a short time but who had spent this interval with Hare Powell of Philadelphia. Whether the German secured the vines from the Old Country or from Powell is uncertain. There was a report that they had been secured from Powell and that he in turn had received them from Bland of Virginia. All of the stories as to how the vines came into Provost's garden lack supporting evidence and some were of the opinion that it had grown in the garden as a seedling.

The Delaware at once attracted great attention and the horticultural journals were full of conflicting accounts of its history and of warm discussions as to its botany. In 1856 it was placed on the grape list of the American Pomological Society fruit catalog as "a new variety which promises well;" two years later it was placed on the list of recommended sorts.

There is still a difference of opinion as to the botany of this variety. The theory advanced by many when it was first introduced, that it is a pure Vinifera, has been abandoned. Millardet and others considered the Delaware a hybrid between Vinifera, Labrusca, Cinerea and Aestivalis. Munson holds that it is of Labrusca-Bourquiniana origin with a probable

slight admixture of Vinifera. He further states that he considers Elsinburgh probably one of the parents. Historically this is corroborated by the fact that Elsingburgh originated in New Jersey not far from where Provost lived.

Vine not a strong grower, hardy except in unfavorable locations, fairly productive, somewhat subject to leaf-hoppers and mildew. Canes medium to below in length, numerous, slender, rather light to medium dark brown; nodes slightly enlarged, not flattened; internodes rather short; diaphragm intermediate in thickness; pith small; shoots glabrous; tendrils intermittent, somewhat short, bifid.

Leaf-buds rather small, of average length, slender, pointed to conical, prominent, open early. Young leaves tinged on lower side and along margin of upper side with a faint golden hue but the prevailing color is light rose-carmine. Foliage not always healthy; leaves medium to small, intermediate in thickness; upper surface dark green, dull, smoothish; lower surface pale green, slightly pubescent; veins inconspicuous; lobes three to five in number, terminal lobe acute to acuminate; petiolar sinus of average depth, narrow to medium; basal sinus shallow and narrow when present; lateral sinus moderately deep, narrow; teeth shallow, of fair width. Flowers fertile, open somewhat late; stamens upright.

Fruit ripens a few days earlier than Concord, keeps well. Clusters medium to small, of average length, slender, rather blunt, often cylindrical, regular, usually shouldered, compact; peduncle medium to short, slender; pedicel short, slender, smooth; brush intermediate in size, light brown. Berries uniform in size and shape, small to medium, roundish, light red, covered with thin lilac bloom, persistent, firm. Skin thin, moderately tough, adheres somewhat to the pulp, contains no pigment, slightly astringent. Flesh light green, translucent, juicy, tender, aromatic, vinous, sprightly and refreshing, sweet to agreeably tart from skin to center, best in quality. Seeds separate easily from the pulp, one to four, average two, intermediate in size, rather broad, notched, short, blunt, light brownish; raphe obscure; chalaza of medium size, above center, circular. Must 100°–118°.

DELAWBA.

(Labrusca, Vinifera, Bourquiniana.)

1. *Am. Pom. Soc. Rpt.*, 1891:126. 2. *U. S. D. A. Rpt.*, 1891:393. 3. *Bush. Cat.*, 1894:114, 115. *fig.* 4. *Ga. Sta. Bul.*, 53:42. 1901.

Of Delawba we can say but little, not having vines of it on the Station grounds. It is an offspring of Delaware crossed with Catawba, as the name indicates, and was introduced with the expectation that it would take the place of one or the other or both of its parents. However, it has made no impress upon the viticulture of this State though it has been tested here

and there in the several grape regions during the past ten years. The fruit resembles Catawba, though not as attractive, the berries averaging smaller, but it ripens almost as early as Delaware, a great point in its favor. The vine, too, is more like Catawba than the Delaware, being more vigorous and productive than the latter. The reports of this variety indicate that it is very promising but it seems not to be making headway as either a fancy or a commercial fruit probably because of characters lacking in the fruit.

Dr. L. C. Chisholm of Spring Hill, Tennessee, produced the Delawba some time about 1880 from seed of Delaware fertilized by Catawba. The variety was introduced in 1895, after having received high encomiums from various horticultural authorities. The following is a compiled description:

Vine usually vigorous and productive, resembling Catawba very closely, blooming with Concord. Cluster above medium to large, moderately compact, cylindrical or slightly tapering, sometimes slightly shouldered. Berries variable in size, ranging from above medium to below, of amber color with lilac bloom; skin quite tough. Not attractive in appearance. It is self-fertile and ripens its berries evenly. Quality good to very good. Ripens shortly after Delaware.

DEVEREAUX.[1]

(Bourquiniana.)

1. *Mag. Hort.*, 9:373. 1843. 2. *U. S. Pat. Off. Rpt.*, 1853:299. 3. *Horticulturist*, 12:458. 1857. 4. *Gar. Mon.*, 2:265. 1860. 5. Downing, 1869:531. 6. *Grape Cult.*, 1:17, 326. 1869. 7. (?) *Bush. Cat.*, 1883:118. 8. *Ib.*, 1894:116. 9. (?) *Texas Farm and Ranch*, Feb. 8, 1896:11.

Black July (5). *Black July* (8, 9). *Blue Grape* (5, 8, 9). *Devereux* (5). *Hart* (4, 5, 8). *Husson* (5, 8, 9). *Lenoir* (9, incorr. 5, 8). Lincoln (4, 7). *Lincoln* (5, ? 8, 9). *McLean* (4, 5, 8, 9). *Sherry* (5, 8, 9). *Sumpter* (5, 9). *Thurmond* (5, 8, 9). *Tuley* (5, 8, 9).

The Devereaux is an old southern grape now nearly obsolete because of its capriciousness as to location. When it can be grown it is of high quality and makes a very good wine. The variety is of only historical and botanical interest. In France the Devereaux was at one time considered a valuable wine grape.

An article in the *Horticulturist*[2] for 1857 states that the Devereaux

[1] Often incorrectly spelled Devereux.

[2] *Horticulturist*, 12:458. 1857.

was found in the woods over forty years before that date by Samuel M. Devereaux, who lived near Sparta, Georgia. It has been considerably confused with varieties which resemble it. The name Lincoln, in particular, is a questionable synonym which Dr. Curtis of Hillsboro, North Carolina, in a letter to the *Gardener's Monthly* for 1860,[1] states was found near the junction of the South Fork and Catawba Rivers by Dr. William McLean. It was known locally under the names of McLean and Hart. Later it was sent to Longworth, who gave it the name Lincoln.

The descriptions of this variety from various sources are conflicting. That given below is copied from the *Bushberg Catalogue*.[2]

"Bunch long, loose, slightly shouldered; berry black, below medium, round; skin fine, tender; flesh meaty, juicy without pulp, and vinous; quality best. Vine a strong grower, and, when free from mildew, moderately productive; wood long-jointed, purplish brown at first, of deeper purplish red when ripe; with bi-forked, intermittent tendrils — these, as also the leaf stalk, are tinged on their base with a purplish brown hue, like the young canes; the buds are covered with a russet down, unfolding with that rosy complexion peculiar to the young, downy leaves of most Aestivalis. The developed foliage is of medium size, entire (not lobed), considerably wrinkled, turgid, with somewhat abundant hair tufts on the lower veins."

DIAMOND.

(Labrusca, Vinifera.)

1. *Gar. Mon.*, 26:336. 1884. 2. *Ib.*, 28:333. 1886. 3. *Ohio Hort. Soc. Rpt.*, 1887–8:85. 4. *Mich. Hort. Soc. Rpt.*, 1889:328. 5. *N. Y. Sta. An. Rpt.*, 9:332. 1890. 6. *Kan. Sta. Bul.*, 28:161. 1891. 7. *Rural N. Y.*, 50:691, 787. 1891. 8. *Kan. Sta. Bul.*, 44:118, 127. 1893. 9. *Rural N. Y.*, 53:616, 645, *fig.*, 646. 1894. 10. *Gar. and For.*, 8:96, 377, 487. 1895. 11. *N. Y. Sta. An. Rpt.*, 15:432, 433. 1896. 12. *Tenn. Sta. Bul.*, Vol. 9:175, 176. 1896. *fig.* 13. *Am. Pom. Soc. Cat.*, 1897:19. 14. *N. Y. Sta. An. Rpt.*, 17:529, 538, 540, 543, 544, 547, 549, 554. 1898. 15. *Va. Sta. Bul.*, 94:139. 1898. 16. *Mo. Sta. Bul.*, 46:38, 44, 45, 50. 1899. 17. *Can. Hort.*, 25:125, 190. 1902. *fig.*

Diamond, *Moore* (13). Moore's Diamond (1, 2, 3, 4, 5, 6, 9.) *Moore's Diamond* (15, 17).

Diamond is surpassed in quality and beauty by few other grapes. When to its desirable fruit characters are added its earliness, hardiness, productiveness and vigor it is surpassed by no other green grape. Niagara is more productive and therefore more profitable in most localities but in

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[1] *Gar. Mon.*, 2:265. 1860.

[2] *Bush. Cat.*, 1894:116.

DIAMOND

many essential characters it falls short of Diamond and the difference in productiveness is not marked. We usually accord Niagara first place among green grapes but Diamond rivals it for the honor. The former attained high rank not only through merit but by much advertisement while Diamond has made its way by merit alone. If we consider the wants of the amateur and of the wine-maker as well as those of the commercial vineyardist, unquestionably Diamond must be accorded a high place among the best all-around grapes.

Diamond is a diluted hybrid between *Vitis labrusca* and *Vitis vinifera;* the touch of the exotic grape given by the Vinifera parents has been just sufficient to give it the richness in flavor of the Old World grape and not overcome the refreshing sprightliness of our native fox grapes. It is without the insipid sweetness of the first or the foxiness of the latter. The Vinifera characters are wholly recessive in vine and foliage, the plant resembling very closely its American parent, Concord. Diamond is not as highly esteemed as a commercial variety as it deserves to be, for beside being of high quality the fruit packs, carries and keeps well. Were it known by consumers the demand for it would be such that it would command a fancy price and thereby more than make up for its lack in fruitfulness, but through the unfortunate condition of American fruit markets it is, more often than not, sold as Niagara and has not therefore established the reputation it should have in the markets. Diamond is in demand among wine-makers and especially for the making of champagnes. For the amateur it has few superiors, the chief drawback for the small garden being that robins prefer it to most other varieties and greatly reduce the crop. Diamond is well established in Canada and can be grown in as great a range of latitude as the Concord. The vine is as free from the attacks of fungi as the Concord but the fruit is a little more susceptible to cryptogamic diseases and especially to black-rot, though not attacked by fungi so much as Niagara.

The late Jacob Moore of Brighton, New York, originated Diamond about 1870 from Concord seed fertilized by Iona. It was introduced about 1885. It has gained in favor somewhat slowly, and was not placed on the grape list of the American Pomological Society fruit catalog until 1897.

Vine medium to vigorous, hardy, productive in most locations. Canes medium to short, not very numerous, of average thickness, brownish or with a slight reddish tinge; nodes slightly enlarged, not flattened; internodes medium to short; diaphragm intermediate in thickness; pith of medium size; shoots pubescent; tendrils intermittent, bifid.

Leaf-buds small, short, pointed to conical, open in mid-season. Young leaves tinged on lower side and along the edges with red. Leaves of average size, thick; upper surface light green, dull, nearly smooth; lower surface light bronze, downy; veins distinct; lobes usually three in number, indistinct; petiolar sinus very shallow; teeth shallow, of mean width. Flowers fertile, open early to somewhat late; stamens upright.

Fruit usually ripens slightly earlier than Niagara, keeps well. Clusters variable in size, medium to short, rather broad, somewhat blunt, cylindrical to slightly tapering, often single-shouldered, compact; peduncle short to medium, moderately thick; pedicel short and thick, covered with a few, inconspicuous warts, wide at point of attachment to berry; brush slender, of average length, pale green. Berries above medium to medium size, roundish to strongly ovate on account of compactness, green with tinge of yellow on riper berries but less yellow than Niagara, glossy, covered with thin gray bloom, persistent, rather firm. Skin thin, toughish, adheres somewhat to the pulp, contains no pigment, astringent. Flesh pale green, rather transparent, juicy, tender, inclined to melting, fine-grained, slightly aromatic, sprightly, nearly sweet next the skin to agreeably tart at center, quality very good. Seeds separate easily from the pulp, one to four, average two or three, intermediate in size, rather broad and long, moderately sharp-pointed, yellowish-brown; raphe shows as a narrow obscure groove; chalaza small, slightly above center, ov -ather obscure.

DIANA.

(Labrusca, Vinifera, Aestivalis?)

1. *Mag. Hort.*, 10:242. 1844. 2. *Horticulturist*, 4:224, 535. 1849. 3. *Mag. Hort.*, 16:28, 306, 546. 1850. 4. *Am. Pom. Soc. Cat.*, 1854. 5. *Mag. Hort.*, 27:6, 262, 490, 523, 531. 1861. 6. *My Vineyard at Lakeview*, 1866:78. 7. *N. Y. Ag. Soc. Rpt.*, 1866:803, 881. 8. *Horticulturist*, 22:356. 1867. 9. *Am. Jour. Hort.*, 5:15, 297. 1869. 10. *Mich. Pom. Soc. Rpt.*, 1873:60. 11. *Am. Pom. Soc. Rpt.*, 1881:37, 119, 123, 136, 153. 12. *Mass. Hort. Soc. Rpt.*, Pt. 1:96. 1883. 13. *Bush. Cat.*, 1883:93. *fig.* 14. *N. Y. Sta. An. Rpt.*, 17:540, 543, 544, 545, 547, 554. 1898. 15. *Va. Sta. Bul.*, 94:137. 1898. 16. *Mo. Sta. Bul.*, 46:38, 43, 45. 1899. 17. *Rural N. Y.*, 61:719, *fig.*, 722. 1902.

When introduced Diana promised to be the popular grape of the North and especially of New England. Its many good qualities warranted the high hopes of those who first grew it but time revealed so many defects that the variety never became widely distributed although few grapes surpass it, or even equal it, in high quality and handsome appearance

DIANA

when at its best. Diana is a seedling of Catawba and was hailed as superior to its parent in quality, appearance and earliness. It was the last named character that especially commended it to northern grape-growers. Catawba can be grown in New York only in the most favored locations and hardly at all in New England even in its southern parts. It fails in the North because the seasons are too short for the fruit to mature. Diana is about two weeks earlier than Catawba and it was therefore thought that the offspring, lacking the defect of the parent, would take the rank in the North that the older variety held in the South.

Diana bears a strong resemblance to Catawba, differing chiefly in having a lighter color, a delicate pale red or rose, and in being less pulpy and more juicy. Usually the bunches, too, are more compact, those of Catawba as grown in the North being as a rule loose and sometimes straggling. The flavor resembles that of Catawba but when well grown and fully ripe it is more delicate and has less of the wild taste. The grapes keep exceptionally well. But its great point of superiority over Catawba is its earliness; it ripens from ten days to a fortnight earlier, making possible, as said above, its culture far to the north. The defects of Diana are as marked as its good qualities. It is precariously tender in cold winters and in regions where Concord goes without protection Diana must be favored. The grapes ripen unevenly, many being green when others are mature, and berries and foliage are both susceptible to fungi. Lastly it is in many localities a shy bearer and is almost always capricious. During the first few years in bearing, the fruit of Diana is very imperfect in flavor and deficient in size, true of many grapes but particularly so of this one. The best qualities of Diana are not brought out until the vines are seven or eight years of age.

Perhaps no grape better illustrates the importance of local influences and of knowledge of the peculiarities of varieties than Diana. All grapes have their likes and dislikes but this one is capricious beyond most others. It wants, for instance, comparatively poor, dry, gravelly soil without any considerable amount of humus or nitrogen. On clays, loams, or rich soils, the vines make a rank growth and the fruits are few, late and of poor quality. So, too, it needs to be long pruned, and to have all surplus bunches removed leaving a comparatively small crop to mature, and these should

hang until frost. To the fact that Diana is so easily influenced must be attributed the great diversity of opinion as to its worth, some holding it to be a most excellent variety while in a nearby vineyard it is considered worthless.

In favorable situations Diana may be expected to make a most satisfactory grape for the amateur and where it does especially well it will prove a profitable variety for the local market. Its splendid keeping qualities make it a very desirable grape for late winter. It is even better in this respect than Catawba, one of the best keepers. While the pulp of Diana has the meaty structure which adapts it for long keeping its pulpiness is not objectionable as in some grapes and its thick skin has a rich, spicy flavor. Wine made from Diana is said to be second to none from our native grapes, equalling or surpassing that made from Catawba.

To Mrs. Diana Crehore of Milton, Massachusetts, is due the honor of having originated Diana. The variety was produced from seed of the Catawba open to cross-pollination, planted about 1834. It was exhibited before the Massachusetts Horticultural Society in 1843. The Pomological Congress at their second meeting in 1850 placed Diana on their list as a "new variety which promises well," and in 1854 it was included in the American Pomological Society list of sorts recommended for general cultivation. The demand for this grape was so keen that in 1850 it was sold for $15 a vine.

The species of Diana is usually given as Labrusca but the Vinifera-like berries and the intermittent tendrils indicate Vinifera and the bloom on the shoots suggests a strain of either Bicolor or Aestivalis.

Vine vigorous, not always hardy, produces light to medium crops, somewhat susceptible to attacks of leaf-hoppers and fungi. Canes pubescent, long, of average number, thick to medium, light brown to reddish-brown, covered with thin blue bloom; nodes enlarged, slightly flattened; internodes medium to long; diaphragm thick; pith medium to large; shoots pubescent; tendrils intermittent, long, bifid.

Leaf-buds large, of average length, thickish, obtuse to conical, open in mid-season. Young leaves colored on lower side and along margin of upper side with faint carmine, the smaller leaves usually heavily coated with thick silvery down. Leaves medium to large, inclined to thick; upper surface variable in color ranging from light to dark green, usually rather dull, nearly smooth to slightly rugose; lower surface pale green, heavily pubescent; lobes vary from three to five, terminal lobe acute; petiolar sinus moderately

deep, wide to medium, often closed and overlapping; basal sinus shallow, not wide; lateral sinus not deep, medium to narrow; teeth shallow, intermediate in width. Flowers fertile, open in mid-season; stamens upright.

Fruit ripens earlier than Catawba, keeps unusually well. Clusters medium to large, intermediate in length, rather broad, tapering to slightly cylindrical, occasionally shouldered, the shoulder being attached to the cluster by a rather long stem, compact to medium; peduncle short to medium, slender; pedicel above average length, covered with small scattering warts; brush of fair length, rather slender, pale green. Berries somewhat irregular in size, above medium to small, roundish to slightly ovate in compact clusters, rather light red covered with thin lilac bloom, persistent, firm. Skin very thick, tough, adheres slightly to the pulp, contains no pigment, with but little astringency. Flesh pale green, translucent, juicy, tough, fine-grained, vinous, with a little foxiness, sweet at skin to agreeably tart at center, good in quality. Seeds do not separate readily from the pulp unless fruit is fully ripe, one to three, average two, intermediate in size, breadth and length, light brown; raphe buried in a rather wide, shallow groove; chalaza large, above center, circular, distinct. Must 88°–90°

DIANA HAMBURG.

(Vinifera, Labrusca, Aestivalis?)

1 *N. Y. Ag. Soc. Rpt.*, 1864:38. 2. *Mag. Hort.*, 31:105, 331, 364. 1865. 3. Thomas, 1867:403. 4. *Am. Jour. Hort.*, 2:328, 329. 1867. *fig.* 5. *N. Y. Ag. Soc. Rpt.*, 1868:224. 6. *Bush. Cat.*, 1883:90.

Diana Hamburg has long since passed from cultivation and was never widely grown. Its parentage is indicated in its name. It is worth discussion here only because it is an illustration of what can be done in grape-breeding and because it was one of the parents of several better known sorts chief of which is Brighton. The fruit of Diana Hamburg is that of the European parent, while the vine is more nearly that of Diana in appearance but quite that of Black Hamburg in constitution, being very susceptible to disease, somewhat tender, unproductive in our climate and ripening its fruit late.

Diana Hamburg was the first of Jacob Moore's productions, having been raised from seed of Diana fertilized by pollen of Black Hamburg about 1860. It was first exhibited at the New York Agricultural Society meeting in September, 1864. For a few years it attracted some attention but soon passed from cultivation. The following description is compiled from various sources:

Vine vigorous when not diseased; canes short-jointed. Leaves of medium size, somewhat concave. Fruit-clusters large, compact, shouldered. Berries above medium, slightly oval, dark red, tender, free from pulp. Except in color, which shows a more reddish tinge, it very closely resembles Black Hamburg. The vine is tender and very susceptible to mildew.

DON JUAN.

(Vinifera, Labrusca.)

1. *Horticulturist*, 29:329. 1874. 2. *Am. Pom. Soc. Rpt.*, 1875:114. 3. *U. S. D. A. Rpt.*, 1875:386. 4. *Bush. Cat.*, 1883:92. 5. *W. N. Y. Hort. Soc. Rpt.*, 36:45. 1891.

In spite of many good characters, as high quality, attractive appearance, and a vine above the average in vigor and hardiness, Don Juan has not become established in American viticulture. It has been tested by grape collectors for forty years and is now passing from even the collections. Its chief fault in this State is that it ripens too late.

Don Juan was originated by J. H. Ricketts of Newburgh, New York, over thirty years ago from seed of Iona pollinated by General Marmora. The originator claimed that Don Juan was a better grape than its parent, Iona, but it has fallen far short of this in the vineyards of the State. The connection of the name with the grape is not apparent.

Vine intermediate in vigor, appears hardy and productive. Canes short, rather brittle, slightly roughened; tendrils intermittent, bifid. Leaves medium to thin, not very large, light green. Fruit ripens rather late, keeps well. Clusters medium to large, rather broad, shouldered, strongly tapering, very loose. Berries large to medium, distinctly oval, dark red, covered with dark lilac or slightly blue bloom, strongly persistent, somewhat soft. Flesh tender and nearly melting, vinous, resembles Black Hamburg somewhat in flavor, good in quality.

DOWNING.

(Vinifera, Aestivalis, Labrusca.)

1. *Am. Hort. An.*, 1871:79. 2. *Am. Pom. Soc. Rpt.*, 1875:113. 3. *Bush. Cat.*, 1883:92. 4. *Gar. Mon.*, 26:306. 1884. 5. *Am. Pom. Soc. Rpt.*, 1885:17. 6. *Kan. Sta. Bul.*, 28:160. 1891. 7. *N. Y. Sta. An. Rpt.*, 11:619. 1892. 8. *Tenn. Sta. Bul.*, Vol. 9:176. 1896. 9. *Mich. Sta. Bul.*, 169:169. 1899. 10. *U. S. D. A. Yr. Bk.*, 1901:388. *col. pl.*

Chas. Downing (1). *Charles Downing* (3, 10). Ricketts' No. 1 (2). *Ricketts' No. 1* (10).

Little known in cultivation, although it has been grown since 1870 and has had the recommendations of our most expert horticulturists, Downing is well worthy a place in the garden of grape-growers at least.

DOWNING

Its high quality, handsome appearance, and excellence as a keeper, make it desirable in all regions where the climate is sufficiently temperate to allow it to withstand the winter and to develop in full its admirable fruit characters. Added to the above qualities are fair vigor and health of vine, while with its defects must be mentioned late ripening and susceptibility to mildew in unfavorable seasons. When grown in most parts of New York the vine of Downing should be laid down in the winter or receive other protection. In most seasons, too, unremitting warfare must be kept up with bordeaux mixture to check mildew. In appearance of bunch and berry Downing is one of the most distinct of our varieties, the clusters being large and well formed and the berries having the long oval shape of a Malaga with a delicate light bloom. The flesh, too, shows *Vitis vinifera* in texture as well as quality while neither seeds nor skins are as objectionable as in the best of our pure-bred American varieties. Few amateurs realize the richness of our cultivated grape-flora or the garden would be supplied by other varieties than Concord, Niagara and Delaware and of these Downing would be one.

J. H. Ricketts of Newburgh, New York, originated Downing some time about 1865. It is one of the first of Ricketts' hybrids and was first known as *Ricketts' No. 1.* The parentage is variously given as Isabella fertilized by Muscat Hamburg, Croton fertilized by Black Hamburg, and Israella fertilized by Muscat Hamburg.[1] The last combination is that given by J. G. Burrows of Fishkill, New York, who was connected with J. H. Ricketts in his work and who introduced Downing in 1883; hence it is probably correct. Ricketts thought highly of this variety and gave it the name of America's great pomologist, Charles Downing.

Vine variable in vigor, usually winter-kills somewhat, not very productive, especially where it winter-kills. Canes short, few, rather slender, nearly dark green to slightly ash-gray tinge, surface covered with thin blue bloom, often roughened with few small warts; nodes much enlarged, strongly flattened; internodes medium to short; diaphragm rather thick; pith large to medium; shoots glabrous; tendrils intermittent, of average length, bifid to trifid.

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[1] After the above was in type we received a communication from Ricketts stating that Downing came from seed of Concord fertilized by Muscat Hamburg. If this is true it is difficult to account for the apparent Aestivalis characters.

Leaf-buds intermediate in size and thickness, short, obtuse to nearly conical, open very late. Leaves medium to small, roundish, thick; upper surface dark green, slightly glossy, rugose; lower surface rather deep green with almost no pubescence; veins somewhat distinct; lobes none to five, terminal lobe acute; petiolar sinus of medium depth, very narrow, closed and overlapping; basal sinus usually lacking but shallow and narrow when present; lateral sinus shallow to medium, narrow; teeth above average in width and depth. Flowers open late; stamens upright.

Fruit ripens a little later than Concord, often keeps until spring. Clusters large, long, rather slender, cylindrical to slightly tapering, uniform, sometimes loosely shouldered, variable in compactness; peduncle short to medium, inclined to thick; pedicel intermediate in length, slender, covered with numerous warts; brush long, slender, greenish. Berries large to medium, distinctly oval, dark purplish-black, glossy, covered with light blue bloom, strongly persistent, almost firm. Skin very thick, tender, adheres considerably to the pulp, contains almost no pigment, without astringency. Flesh greenish or with slight yellow tinge, translucent, very juicy, tender, fine-grained, vinous, mild, very good in quality. The few seeds separate easily from the pulp, one to three, average two, intermediate in size and breadth, strongly notched, rather long, brownish; raphe obscure; chalaza of mean size, surface frequently roughened, above center, circular to oval, variable in distinctness.

DRACUT AMBER.

(Labrusca.)

1. *U. S. Pat. Off. Rpt.*, 1859:48, 66. 2. *Gar. Mon.*, 3:26. 1861. 3. *Am. Pom. Soc. Cat.*, 1883:26. 4. *N. Y. Sta. An. Rpt.*, 11:620. 1892. 5. *Iowa Hort. Soc. Rpt.*, 1893:161. 6. *Bush. Cat.*, 1894:117. 7. *N. Y. Sta. An. Rpt.*, 17:548, 554. 1898. 8. *Am. Pom. Soc. Cat.*, 1899:28.

Early Amber (6).

Dracut Amber receives the attention given it here chiefly because it is a representative variety of the northern Labrusca and of the red type of Labrusca. The fruit has no particular merit, its thick skin, coarse pulp, seeds and rank foxy taste all being objectionable. But the vine is very hardy and productive, and the fruit ripens early making it valuable in the northern limits of viticulture and in other locations where a vigorous, hardy early grape is wanted. It is of no value for the market or for wine-making and therefore of use only for the home in the far North, though the fact that it does not keep well is still further against it for this purpose. The variety is of interest to the breeder who desires a red Labrusca of the northern type.

Asa Clement of Dracut, Massachusetts, originated Dracut Amber from

DRACUT AMBER

seed of a native reddish Labrusca that grew near a Catawba vine. The seed was planted about 1855 and Mr. Clement called the resulting vine the Amber grape. Later the new variety was introduced by Jacob W. Manning under the name Dracut Amber. Catawba is supposed by Clement to have been the male parent, but this is wholly conjectural and doubtful as the botanical and horticultural characters are those of a northern Labrusca. It was placed on the grape list of the American Pomological Society fruit catalog in 1883 and was dropped, probably inadvertently, in 1897, as it was replaced in 1899 and has since remained.

Vine vigorous, hardy, productive, somewhat susceptible to attacks of leaf-hoppers. Canes long, rather numerous, medium to below in size, darkish-brown; nodes slightly enlarged, usually flattened; internodes medium to below in length; diaphragm of average thickness; pith above medium size; shoots pubescent; tendrils continuous, long, bifid to sometimes trifid.

Leaf-buds decidedly variable in size, length, and thickness, prominent, obtuse to conical. Young leaves tinged on lower side with bright carmine and very strongly colored along margin of upper side with carmine. Leaves large to medium, rather thick; upper surface dark green, dull, smoothish; lower surface pale green or grayish, faintly cobwebby; veins indistinct; lobes three or sometimes five in number with terminal lobe obtuse to acute; petiolar sinus moderately deep, rather narrow to medium; basal sinus shallow to narrow; lateral sinus usually shallow, medium to rather wide; teeth shallow, of average width. Flowers sometimes on plan of six, slightly sterile to fertile, open in mid-season; stamens variable in length.

Fruit ripens earlier than Concord, does not keep well, as the berries soon shrivel. Clusters not especially satisfactory in general appearance, variable in size, short to medium, rather broad, somewhat cylindrical, irregular, rarely shouldered, compact to medium; peduncle short, slender; pedicel nearly short, of average thickness, covered with numerous warts, enlarged at point of attachment to berry; brush rather long, light yellowish-green. Berries medium to large, variable in shape ranging from oval to roundish, dull pale red or dark amber, covered with thin lilac or faint blue bloom, often inclined to drop when overripe, soft. Skin unusually thick, somewhat tender, adheres slightly to pulp, contains no pigment, slightly astringent. Flesh greenish, translucent, juicy, rather fine-grained and tough, very foxy, moderately sweet to decidedly acid at center, inferior in quality. Seeds adherent, two to five in number averaging three, large to below medium, broad to medium, light brown; raphe shows only as a groove; chalaza intermediate in size, oval, above center, rather distinct and in a depression.

DUTCHESS.[1]

(Vinifera, Labrusca, Bourquiniana? Aestivalis?)

1. *Am. Pom. Soc. Rpt.*, 1877:36. 2. *Gar. Mon.*, 22:176. 1880. 3. *Mass. Hort. Soc. Rpt.*, 1880:239. 4. Downing, 1881:166 app. 5. *Am. Pom. Soc. Cat.*, 1881:24. 6. *Am. Pom. Soc. Rpt.*, 1883:124. 7. *Ib.*, 1885:103, 107. 8. *Kan. Hort. Soc. Rpt.*, 1891:126. 9. *Kan. Sta. Bul.*, 14:87. 1890. 10. *Ala. Sta. Bul.*, 10:9. 1890. 11. *Gar. and For.*, 5:512. 1892. 12. *Can. Hort.*, 17:253, 267. 1894. 13. *Bush. Cat.*, 1894:117, 118. *fig.* 14. Husmann, 1895:32, 95, 102. 15. *Tenn. Sta. Bul.*, Vol. 9:176, 195. 1896. 16. *N. Y. Sta. An. Rpt.*, 15:432. 1896. 17. *N. Y. Sta. An. Rpt.*, 17:529, 538, 541, 544, 548, 549, 552. 1898. 18. *Miss. Sta. Bul.*, 56:12. 1899. 19. *Mo. Sta. Bul.*, 46:38, 43, 45, 46, 76. 1899. 20. *W. N. Y. Hort. Soc. Rpt.*, 44:91. 1899. 21. *Mo. Hort. Soc. Rpt.*, 1900:365.

Dutchess is a variety for the amateur, always to be sought for because of its delicious flavor, its handsome appearance, and its long-keeping qualities. It has never been largely grown in commercial vineyards because the vine is tender to cold and capricious as to soil and other conditions. Moreover the berries do not ripen quite evenly and berries and foliage are very susceptible to fungi. In soils to which it is not adapted berries and bunches are small and the latter are loose and straggling. But in spite of its defects Dutchess should not be discarded by the grape-lover for there are few grapes better for the table and that will take its place as a pure-flavored, refreshing, juicy grape. It is sweet and rich and yet does not cloy the appetite; the flesh is translucent, sparkling, fine-grained and tender; the seeds are small, few and part readily from the pulp; the skin is thin yet tough enough for good keeping but not so much so as to be objectionable in eating. The bunches are large and compact when well grown and the berries, though but medium sized, are attractive because of their translucency, the touch of amber when fully ripe, and the distinctive dots so well shown in the color-plate. Dutchess does not want an extremely rich soil nor close pruning and the bunches should be thinned and as soon as ripe ought to be picked as there is a tendency to crack when overripe or exposed to the wet. Dutchess is self-fertile and therefore desirable where only a few vines are wanted, obviating the trouble of mixed planting for cross-pollination. The clusters are especially fine when bagged.

[1] This variety was named after Dutchess County, New York, and the spelling is as given in this text and not "Duchess" as usually spelled.

DUTCHESS

Dutchess is another variety from A. J. Caywood[1] of Marlboro, New York, from seed of a white Concord seedling pollinated by mixed pollen of Delaware and Walter planted in 1868. The white fruited maternal vine was an offspring of Concord pollinated by Montgomery. Dutchess was introduced by its originator about 1880. The variety was placed on the grape list of the American Pomological Society fruit catalog in 1881 where it has since been retained.

Vine vigorous to weak, depending upon amount of winter injury, often not hardy, an uncertain bearer, susceptible to mildew in some localities. Canes intermediate in length and number, medium to below in size, moderately dark brown, covered with a slight amount of bloom, surface usually somewhat roughened; nodes slightly enlarged and flattened; internodes short to very short; diaphragm unusually thick; pith below average size; shoots slightly pubescent; tendrils intermittent, short, bifid to trifid.

Leaf-buds large to medium, short, thick to medium, conical to obtuse. Young leaves faintly tinged on lower side and along margin of upper side with light rose-carmine. Leaves above medium to below, irregular in outline, of average thickness; upper surface light green, slightly glossy, moderately smooth; lower surface pale green, pubescent; veins not distinct; leaf usually not lobed, with terminus slightly acute; petiolar sinus of average depth, medium to narrow; basal sinus shallow when present; lateral sinus varies from medium in depth to a mere notch; teeth intermediate in depth and width. Flowers fertile or nearly so, open somewhat late; stamens upright.

Fruit ripens in mid-season, keeps and ships well. Clusters large to medium, long, rather slender, below average width, not very uniform, slightly tapering to cylindrical, with prominent single shoulder, medium to compact; peduncle short to medium, not

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[1]Andrew Jackson Caywood was born near Modena, Ulster County, New York, in 1819. During his early life he was a mason and contractor and engaged in building operations in Orange and Ulster counties. When about twenty-five years of age he became interested in fruit culture and was soon one of the leading fruit-growers in his section. Caywood's grape-breeding work appears to have started about 1850, while he still lived at Modena. In 1861 he removed to Poughkeepsie, and about 1865, what was probably his first grape, the Walter, was brought to the attention of the public. In 1877 he removed to Marlboro, where for many years he conducted a nursery business in connection with fruit raising, first under the firm name of Ferries & Caywood, and later as Caywood & Son, his son Walter having entered the business. Caywood's last years were clouded with financial troubles and failing health. In 1889 he died at his home in Marlboro. No record is available of Caywood's productions nor his manner of work. He appears to have differed from the grape-breeders of his day in that he produced second rather than first generation hybrids. Of these his most important productions are: Dutchess, Metternich, Nectar, Poughkeepsie, Ulster and Walter, though he raised many others, most of which were never named nor disseminated. Caywood's years of unremitting labor in improving grapes will long make his name prominent in American viticulture.

very thick; pedicel inferior in length, quite slender, nearly smooth, enlarged at point of attachment to fruit; brush amber-colored. Berries of medium size, roundish to oval, pale yellowish-green verging on amber, some berries showing a decided bronze tinge, covered with thin gray bloom, persistent, firm. Skin sprinkled with small dark dots, rather thin, tough, adheres to the pulp, contains no pigment, without astringency. Flesh very pale green, translucent, juicy, fine-grained, tender, vinous, sweet, of pleasant flavor, quality high; on heavy clay soils the quality is not fully developed. The seeds, which are tender and easily crushed, separate readily from the pulp, one to two or occasionally three, rather small, wide, short to medium, plump, moderately sharp-pointed, brownish; raphe obscure; chalaza of average size, roundish, above center, distinct.

EARLY DAISY.

(Labrusca.)

1. *Pa. Sta. Rpt.*, 1892:121. 2. *Bush. Cat.*, 1894:119. 3. *Amer. Gard.*, 15:392, 445. 1894. 4. *Ill. Hort. Soc. Rpt.*, 1904:228. 5. *Can. Cen. Exp. Farms Rpt.*, 1905:107, 108.

The variety has been tried thoroughly in various grape regions and though it seemingly has no serious faults, on the other hand its good qualities are not such as to make it more than commonplace. Its earliness ought to commend it somewhat as the ripening period is eight or ten days earlier than Champion or Moore Early, making it one of the very earliest varieties. For a grape maturing at its season it both keeps and ships well. It would seem to be as desirable, or more so, than Hartford or Champion.

Early Daisy was originated by Mr. John Kready of Mount Joy, Pennsylvania, in 1874, as a chance seedling in his garden. It is supposed by many, from its general characters, to be a seedling of Hartford.

Vine vigorous, hardy, produces fair crops. Tendrils continuous, bifid. Leaves medium to small, light green; lower surface slightly pubescent, cobwebby. Flowers nearly sterile. Fruit ripens as early or earlier than Hartford and is a good shipper and keeper for an early grape. Clusters small to medium, often blunt at ends, slightly cylindrical, sometimes single-shouldered, compact. Berries of medium size, roundish, rather dull black, covered with abundant blue bloom, persistent. Skin tough, contains a large amount of purplish-red pigment. Flesh tough, solid, slightly aromatic, rather tart at skin to acid at center, inferior in flavor and quality. Seeds numerous, of average size. Not good enough for dessert purposes.

EARLY OHIO

EARLY DAWN.

(Labrusca, Vinifera, Aestivalis.)

1. *Am. Pom. Soc. Rpt.*, 1875:67. 2. *Ib.*, 1881:43. 3. Downing, 1881:166, app. 4. *Bush. Cat.*, 1883:94. 5. *Va. Sta. Bul.*, 30:108. 1893.

Early Dawn is a black Labrusca-Vinifera hybrid of fine quality and attractive appearance but so lacking in necessary vine characters in New York as to be practically worthless. Although it originated in New York it was never widely grown in this State. It is now, so far as records show, nearly obsolete.

Dr. Wm. A. M. Culbert of Newburgh, New York, is the originator of Early Dawn, the date of its origin being some time about 1870. It is reported to have come from seed of Israella fertilized by Black Hamburg.

Vine a fair to strong grower, not very hardy, medium to very productive. Canes rather long, covered with thin blue bloom; tendrils intermittent, bifid to trifid. Leaves medium to small; lower surface very pubescent and slightly hairy. Flowers sterile or nearly so, open in mid-season; stamens reflexed. Fruit ripens about two weeks earlier than Concord, keeps and ships well. Clusters medium to large, nearly cylindrical, irregular in outline, vary from not shouldered to a heavy single shoulder or sometimes with a double shoulder, medium in compactness. Berries rather small, roundish, attractive purplish-black, covered with heavy blue bloom, persistent. Flesh very juicy, tender, slightly vinous, sprightly, agreeably tart, variable in flavor and quality, ranging from fair to very good. Seeds not numerous, broad, plump.

EARLY OHIO.

(Labrusca.)

1. *An. Hort.*, 1892:176. 2. *N. Y. Sta. An. Rpt.*, 12:619. 1893. 3. *Rural N. Y.*, 53:645. 1894. *fig.* 4. *Bush. Cat.*, 1894:119, 120. *fig.* 5. *Wis. Sta. An. Rpt.*, 13:226. 1896. *fig.* 6. *Rural N. Y.*, 56:627, *fig.*, 630, 823. 1897. 7. *N. Y. Sta. An. Rpt.*, 17:529, 548, 554. 1898.

Early Ohio is remarkable, chiefly, in being one of the earliest commercial grapes. The fruit resembles that of Concord, of which it is probably a seedling. The claims made for this variety that it is hardy, vigorous and productive, have not been borne out on the Station grounds; but on the contrary the vine is somewhat tender, is not a strong grower, and does not bear large crops. The quality is very poor. Now that the South is sending many grapes of high quality to northern markets at the time Early Ohio and other grapes of its season are ripening it is doubtful if a grape having only earliness to commend it should have a place in our

viticulture. Notwithstanding its defects Early Ohio is grown somewhat commonly in New York though its culture is on the wane.

The original seedling of Early Ohio was found in the year 1882 in the vineyard of R. A. Hunt, at Euclid, Ohio, between rows of Delaware and Concord. It was introduced in 1892 by the C. S. Curtice Company, of Portland, New York.

Vine medium to weak, often tender, usually produces medium crops. Canes short to very short, few in number, rather slender, brownish with a slight reddish tinge; nodes somewhat enlarged, flattened; internodes short; diaphragm thick; pith intermediate in size; shoots pubescent; tendrils continuous, usually short, bifid.

Leaf-buds rather small and short, inclined to slender, pointed to conical, open in mid-season. Young leaves lightly tinged on under side and along margin of upper side with rose-carmine. Leaves intermediate in size, of average thickness; upper surface light green, dull, smoothish; lower surface varies from pale green to slight bronze, pubescent; veins fairly distinct; lobes vary from none to three, with terminal lobe acute; petiolar sinus medium to shallow, rather wide; basal sinus usually absent; lateral sinus nearly shallow, wide to rather narrow; teeth shallow to sometimes medium, somewhat narrow. Flowers fertile, open in mid-season; stamens upright.

Fruit ripens two or three weeks earlier than Concord, some seasons a few days earlier than Moore Early, does not keep well. Clusters medium in size, intermediate to long, below average in thickness, tapering, frequently not shouldered, moderately compact; peduncle short to medium, of fair thickness; pedicel intermediate in length, medium to rather slender, covered with few, small warts; brush above average length, slender, tinged with red. Berries not very uniform in size, averaging medium, roundish, purplish-black, slightly glossy, covered with rather heavy blue bloom, persistent, firm. Skin intermediate in thickness and toughness, adheres slightly to the pulp, contains a moderate amount of reddish pigment, astringent. Flesh greenish, translucent, juicy, somewhat tough, slightly aromatic, sweet at skin but slightly acid at center, inferior in quality. Seeds do not separate easily unless fully ripe, one to four, average three, intermediate in size, length, and breadth, notched, light brown with yellowish-brown tips; raphe obscure; chalaza of fair size, slightly above center, circular to oval, rather obscure.

EARLY VICTOR.

(Labrusca, Bourquiniana?)

1. *Am. Pom. Soc. Rpt.*, 1877:44. 2. Downing, 1881:166, app. 3. *Am. Pom. Soc. Rpt.*, 1881:34. 4. *N. J. Hort. Soc. Rpt.*, 1881:13. 5. *Bush. Cat.*, 1883:96. 6. *Am. Pom. Soc. Cat.*, 1883:26. 7. *Am. Pom. Soc. Rpt.*, 1885:103, 105. 8. *Rural N. Y.*, 45:622, 653. 1886. 9. *Kan. Hort. Soc. Rpt.*, 1886:187. 10. *Can. Hort.*, 11:287. 1888. 11. *Mo. Hort. Soc. Rpt.*, 1889:361, 373. 12. *W. N. Y. Hort. Soc. Rpt.*, 36:40. 1891. 13. *Bush. Cat.*, 1894:121. 14. *Mich. Sta. Bul.*, 169:170. 1899. 15. *N. Y. Sta. An. Rpt.*, 18:395. 1899. 16. *Can. Hort.*, 23:217. 1900.

EARLY VICTOR

Early Victor is especially worthy of notice because it is highest in quality of the very early black grapes. When one tastes this variety at the beginning of the grape season, he has no palate for Hartford, Champion, Ives, Janesville, or even Moore Early, and he will be conscious of defects in the flavor of many of the later grapes which are supposed to have high quality. Early Victor is especially pleasing to those who want a pure-flavored grape and object to the foxiness of our native varieties so marked in Hartford and Champion but almost wholly lacking in this variety. Were it but a few days earlier and bunch and berry a little larger and more attractive, Early Victor might be the grape *par excellence* for home and market to begin the grape season. The vines are hardy, healthy, vigorous, and productive, with growth and foliage greatly resembling Hartford, which is probably one of its parents, Delaware being the other. The bunches are small and compact and somewhat variable in shape; the berries are about the size and shape of those of Delaware. Its season is that of Moore Early and Hartford, or a little later, though, like many black grapes, it colors before it is ripe and is often picked much too green. Unfortunately the fruit is susceptible to black-rot and a little inclined to shrivel after ripening. Although introduced into American viticulture in 1881, Early Victor is still little known and deserves far more general recognition both by the amateur and the commercial grape-grower.

John Burr,[1] of Leavenworth, Kansas, originated Early Victor about 1871 and sent it out for testing in 1881. It was placed on the grape list of the American Pomological Society fruit catalog in 1883 and is still retained.

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[1] John Burr was born in Bridgeport, Connecticut, in 1800. In early life he removed to Ohio, where, although he was engaged in mercantile pursuits, he passed his leisure time in experimenting with strawberries. In this work he was quite successful, producing Burr's Pine and Burr's Seedling, once popular sorts. In 1858 Burr moved to Kansas and soon after began breeding grapes. For this work he was a believer in natural pollination and planted the varieties which he desired to use as parents in close proximity that they might pollinate each other. Burr at first used Concord, Hartford, Isabella, and other grapes of this class as parents, but later he destroyed all of the seedlings of these and used Delaware, Goethe, Salem, Catawba, and other Vinifera hybrids. He did not take trouble to note from which variety the seed came but mixed and planted all together. The records of the parentage of his productions are consequently usually unsatisfactory. Most of his grape productions were introduced to the public by Stayman & Black, a nearby nursery firm. Of Burr's many seedlings he gave names to the following: Cochee, Early Victor, Eclipse, Evaline, Ideal, Iola, Jewel, Magnate, Matchless, Mendota, Omega, Osage, Osee, Paragon, Peola, Primate, Pulasky, Seneca, Superior, Standard, Supreme, and White Jewel. Burr died at his home in Leavenworth, Kansas, in 1892.

Early Victor is said to be a seedling of Delaware pollinated by Hartford. This, however, is mere surmise, as nothing is known positively as to its parentage, and the statement was made frequently by the Kansas Horticultural Society, of which Burr was a member, that it was a seedling of Concord. It was introduced, probably about 1887, by Stayman & Black of Leavenworth.

Vine vigorous, healthy, hardy, productive. Canes long, numerous, rather slender, dark brown to slightly reddish-brown, surface pubescent; nodes enlarged, usually not flattened; internodes long to medium; diaphragm nearly thin; pith intermediate in size; shoots pubescent; tendrils continuous, of average length, bifid to sometimes trifid.

Leaf-buds of average size, short to medium, rather thick, often strongly compressed, nearly obtuse to conical, open in mid-season. Young leaves tinged lightly on upper and lower sides with rose-carmine. Leaves medium to above in size, rather thick; upper surface dark green, moderately smooth; lower surface nearly whitish, heavily pubescent; veins well defined; lobes three to five in number, terminal lobe acute; petiolar sinus intermediate in depth and width; basal sinus shallow and moderately wide when present; lateral sinus medium to above in depth, narrow to medium in width; teeth of average depth and width. Flowers nearly fertile to somewhat sterile, open in mid-season; stamens upright.

Fruit ripens with Moore Early or a little later, does not keep well. Clusters medium to small, below average length, variable in shape, cylindrical to tapering, frequently single-shouldered, compact; peduncle intermediate in length and thickness; pedicel medium to short, covered with numerous small warts; brush wine-colored or pinkish-red. Berries small to medium, roundish to slightly oblate, dark purplish-black, rather dull, covered with heavy blue bloom, persistent, not very firm. Skin rather thin, medium to tough, adheres but slightly to the pulp, contains much red pigment, astringent. Flesh greenish-white, nearly opaque, fine-grained, of medium toughness, aromatic, slightly vinous, not foxy, sweet at skin but slightly acid at center, good in quality. Seeds do not separate easily from the pulp unless the fruit is thoroughly ripe, one to four, average three, of medium size, broad, notched, below mean length, usually somewhat blunt, dark brown; raphe obscure; chalaza of fair size, slightly above center, circular, somewhat obscure.

EATON.

(Labrusca.)

1. *Mass. Hort. Soc. Rpt.*, **1879**:161. 2. *Ib.*, **1880**:231. 3. *Gar. Mon.*, **27**:335. 1885. 4. *U. S. D. A. Rpt.*, **1887**:633. 5. *Rural N. Y.*, **48**:639, 641. 1889. *fig.* 6. *N. Y. Sta. An. Rpt.*, **9**:326. 1890. 7. *W. N. Y. Hort. Soc. Rpt.*, **36**:42. 1891. 8. *Ill. Sta. Bul.*, **28**:254. 1893. 9. *Bush. Cat.*, **1894**:123. 10. *Mass. Hatch Sta. Bul.*, **37**:11, 14. 1896. 11. *N. Y. Sta. An. Rpt.*, **17**:529, 548, 552, 559. 1898. 12. *Mo. Sta. Bul.*, **46**:39, 42, 44, 45, 50, 54, 76. 1899.

Eaton's Seedling (1, 2).

EATON

Eaton is a pure-bred seedling of Concord which it surpasses in appearance but does not equal in flavor. In appearance of bunch it is one of the handsomest of our native grapes but as a table grape it ranks low. Its flesh is tough and stringy and, though sweet at the skin, is acid at the seeds. It has the same foxiness that characterizes Concord but with more juice and less richness than its parent so that it is well described as a "diluted Concord". The skin is very similar to that of Concord, neither thicker nor thinner, and the fruit packs, ships and keeps about the same, though if any thing less well because of the greater amount of juice. The season is a few days earlier than Concord. The vine is healthy, vigorous, hardy and productive and very similar in all botanical characters to its parent. The grapes ripen unevenly, the flowers are self-sterile and in some locations it is a shy bearer. Eaton has been grown for nearly forty years and has not found favor with either the grower or the consumer and is being less and less grown, remaining in our viticulture only as a handsome exhibition grape and an interesting seedling of Concord.

This mammoth Concord, the Eaton, originated with Calvin Eaton of Concord, New Hampshire, about 1868 from seed of Concord. Mr. Eaton states that this was the best vine out of a lot of two thousand seedlings. The new variety was purchased by John B. Moore & Son of Concord, Massachusetts, in 1882, and was introduced by them in 1885. Owing to Mr. Moore's death it soon passed into the hands of the T. S. Hubbard Company, of Fredonia, New York. It at once attracted much attention on account of its fine appearance and for a time was very popular, its popularity declining chiefly because of the poor quality of the fruit.

Vine vigorous, healthy, hardy, usually productive. Canes intermediate in length and number, thick to medium, light brown changing to darker brown at the nodes, covered with a small amount of blue bloom; nodes enlarged, slightly flattened; internodes short to medium; diaphragm of average thickness; pith large to medium; shoots pubescent; tendrils continuous, rather long, bifid to trifid.

Leaf-buds medium to below in size, short, of nearly mean thickness, conical to pointed, open in mid-season. Young leaves lightly tinged on under side and along margin of upper side with carmine. Leaves healthy, large, often roundish, thick; upper surface dark green, of average smoothness; lower surface tinged with bronze, heavily pubescent; veins distinct; lobes three when present, with terminal lobe acute; petiolar sinus medium to shallow, rather wide; basal sinus usually lacking; lateral sinus shallow, narrow, often

notched; teeth shallow to medium, not very wide. Flowers partly fertile to somewhat sterile, open early; stamens upright.

Fruit ripens slightly before Concord, keeps and ships only fairly well. Clusters large to medium, short to above medium, often very broad, blunt, slightly tapering, usually single-shouldered but sometimes double-shouldered, compact to medium; peduncle short to medium, thick; pedicel medium to rather long, thick, nearly smooth, wide at point of attachment to berry; brush slender, pale green. Berries rather uniform in size, averaging large, roundish, black, not glossy, covered with heavy blue bloom, persistent, firm. Skin intermediate in thickness, rather tough, adheres considerably to the pulp, contains much purplish-red pigment, slightly astringent. Flesh greenish, translucent, juicy, rather tough, slightly stringy and foxy, nearly sweet at skin but quite acid at center, fair in quality, ranking below Concord. Seeds rather adherent, one to four in number, average two or three, above mean size, inclined to broad, notched, intermediate in length, plump, somewhat blunt, light brown; raphe buried in a rather wide, shallow groove; chalaza nearly large, slightly above center, irregularly circular to oval, obscure.

(I) ECLIPSE.

(Labrusca.)

1. *Ill. Hort. Soc. Rpt.*, 1899:216. 2. *Ib.*, 1904:228. 3. *Rural N. Y.*, 65:852. 1906. 4. *Ib.*, 66:24, 344, 412. 1907.

Riehl's New Early Grape (3). Riehl's No. 10 (1, 2). *Riehl's No. 10* (4).

There are two grapes bearing the name Eclipse, the origin and history of both of which are briefly set forth below. Of the two, Riehl's Eclipse alone is deemed worthy of general discussion, the other, a green variety of this name, having passed out of cultivation if it were ever grown in New York.

The grape under consideration, known for some years as *Riehl's No. 10*, is a comparatively new candidate for pomological honors, not having been named and introduced as Eclipse until 1906. It has not been grown largely in New York and the East and we can therefore say but little of it other than to describe it as it grows on the Station grounds and to state that in the West, Illinois in particular, it is most highly recommended. At Geneva the Eclipse is very like the Concord, one of its grandparents, it being a seedling of Niagara, differing chiefly in being earlier and of better quality. Bunches and berries are a little smaller than Concord. The vines are hardy, healthy and productive, promising well for commercial plantations. In Illinois it is said to hang on the vines long after it is ripe

ECLIPSE

without deterioration and not to crack in wet weather. The color-plate and the description given below show the Eclipse as it grows at this Station and if the grape-grower wishes a variety answering to the general characters so depicted, the Eclipse is certainly worthy a trial in New York.

E. A. Riehl of Alton, Illinois, is the originator of Eclipse, the date of its origin being about 1890. He states that this is one of the seedlings from a lot of Niagara seed which was probably cross-pollinated by other varieties. The variety was introduced in 1906 by the Stark Brothers Nurseries and Orchards Company, Louisiana, Missouri.

Vine vigorous, hardy, productive. Canes medium to above in length and number, intermediate in size, rather dark reddish-brown; nodes slightly enlarged; internodes of average length; diaphragm thick; pith large to medium; shoots pubescent; tendrils continuous, somewhat long, bifid.

Leaf-buds medium to nearly small, short, inclined to slender, pointed to conical, open in mid-season. Young leaves colored on lower side only, prevailing color pale green with slight rose-carmine tinge. Leaves medium to large, of average thickness; upper surface dark green, intermediate in smoothness; lower surface whitish with slight bronze tinge, heavily pubescent, veins well defined; lobes none to three with terminal lobe acute to acuminate; petiolar sinus deep, medium to narrow; basal sinus usually lacking; lateral sinus of average depth, rather narrow, often notched; teeth medium to shallow, nearly narrow. Flowers sterile, open in mid-season; stamens reflexed.

Fruit ripens slightly earlier than Concord, keeps fairly well. Clusters intermediate in size, below average length, medium to rather broad, tapering to cylindrical, frequently single-shouldered, moderately compact; peduncle nearly short, thick to medium; pedicel short, somewhat thick, covered with numerous small warts; brush long, pale green. Berries large to medium, slightly oval, rather dull black, covered with abundant blue bloom, persistent, firm. Skin intermediate in thickness, tender, adheres but slightly to the pulp, contains a small amount of wine-colored pigment, somewhat astringent. Flesh pale green, translucent, juicy, tender, rather fine-grained, foxy, sweet next the skin to agreeably tart at center, resembles Concord very closely in flavor, good in quality. Seeds separate very easily from the pulp, one to four, average two or three, of mean size, somewhat short, broad to medium, distinctly notched, rather blunt, brownish; raphe buried in a deep groove; chalaza of average size, slightly above center to nearly central, circular to nearly pear-shaped, distinct.

(II) ECLIPSE.

(Labrusca, Vinifera.)

1. *Mo. Hort. Soc. Rpt.*, 1889:372. 2. *Ib.*, 1892:269. 3. *Bush. Cat.*, 1894:123. 4. *Va. Sta. Bul.* 94:139. 1898. 5. *Mo. Sta. Bul.*, 46:39. 1899.

This Eclipse was produced by John Burr of Leavenworth, Kansas, about 1880, from mixed seed. It attracted some attention in the Middle West, where the fruit was exhibited at various meetings but failed to attain favor in the vineyard. It is now practically obsolete.

Vine vigorous, injured in severe winters, variable in productiveness, somewhat susceptible to mildew. Canes long to medium, of average number, thick; internodes long; tendrils continuous to intermittent, bifid to sometimes trifid. Leaves not healthy, large to medium, of average greenness; lower surface grayish-white. Flowers partly sterile; stamens upright. Fruit ripens a little later than Diamond, keeps well. Clusters medium to small, of average length, frequently single-shouldered, medium to broad, compact to medium. Berries large to medium, roundish to oblate, light green often with tinge of yellow, covered with thin gray bloom, persistent. Skin thin, of average toughness, covered with scattering, small, reddish-brown dots. Flesh tender, vinous, sprightly, less sweet than Niagara, good to very good in quality. Seeds separate easily from the pulp, one to four, average three, above medium in size, intermediate in length and width; raphe obscure.

ELDORADO.

(Labrusca, Vinifera.)

1. *Am. Pom. Soc. Rpt.*, 1881:33. 2. *Rural N. Y.*, 45:622. 1886. 3. *Ib.*, 51:681, 726. 1892. 4. *N. Y. Sta. An. Rpt.*, 11:621. 1892. 5. *Bush. Cat.*, 1894:123. 6. *Col. Sta. Bul.*, 29:22. 1894. 7. *Rural N. Y.*, 56:822. 1897. 8. *N. Y. Sta. An. Rpt.*, 17:530, 541, 544, 548, 554. 1898. 9. *Ib.*, 18:375, 387, 396. 1899. 10. *Ill. Hort. Soc. Rpt.*, 1902:224.

Eldorado is one of the best flavored of all early green grapes but unfortunately it has defects which have kept it from becoming popular and it is now rapidly passing from cultivation. It is delicately flavored, with a very distinct aroma and taste; the flesh is tender, melting and sweet from skin to seeds, all qualities rarely found in an early grape. The season is about that of Moore Early, a time when there are few other really good white grapes. Eldorado is a full sister of Lady Washington and is if anything better flavored than that most excellent variety. These two grapes are secondary hybrids of Labrusca and Vinifera, Concord being the native parent. The vines inherit most of the good qualities of Concord but

Eldorado does not inherit Concord's ability to set fruit well; even with cross-pollination it sometimes fails to bear and is not worth growing unless planted in a mixed vineyard. The clusters are so often small and straggling under the best possible conditions that the variety cannot be highly recommended to the amateur yet its delightful flavor and its earliness may commend it to some.

J. H. Ricketts of Newburgh, New York, produced Eldorado some time about 1870 from seed of Concord fertilized by Allen's Hybrid. It was introduced by the originator about 1881 and is still offered for sale by a few nurserymen. Eldorado has been somewhat commonly grown in gardens and collections in the East but does not succeed in the West.

Vine usually a strong grower, hardy except in severe winters, an uncertain bearer. Canes long, not very numerous; tendrils intermittent to rarely continuous, bifid to trifid. Leaves below medium to large, irregularly roundish, dark green, rugose on older leaves; lower surface tinged with bronze, pubescent. Flowers sterile, open medium late; stamens reflexed. Fruit ripens earlier than Concord, keeps well. Clusters do not always set perfectly and are quite variable in size, frequently single-shouldered, not uniform in compactness. Berries large to medium, roundish, yellowish-green changing to a golden yellow, covered with thin gray bloom. Flesh tender, slightly foxy, sweet from skin to center, mild, high flavored, good to very good in quality. Seeds intermediate in size and length, blunt.

ELSINBURGH.

(Vinifera, Aestivalis.)

1. *Amer. Farmer*, 9:221. 1827. 2. Prince, 1830:176. 3. Downing, 1845:255. 4. Elliott, 1854:245. 5. *Horticulturist*, 12:458. 1857. 6. Phin, 1862:254. 7. *Am. Pom. Soc. Cat.*, 1862:90. 8. Husmann, 1866:120. 9. *Am. Pom. Soc. Rpt.*, 1881:38. 10. *Bush. Cat.*, 1883:94. 11. *N. Y. Sta. An. Rpt.*, 13:603. 1894. 12. *Ib.*, 17:530, 548, 554 1898.

Blue Elsingburg (2). *Elsenburgh* (2). *Elsinboro* (4, 10, 11). ELSINGBURG (7). *Elsinburg* (6). ELSINBOROUGH 6). *Elsinborough* (2, 3, 4). *Missouri Bird's Eye* (8). *Smart's Elsinburgh* (3, 4). *Smart's Elsingborough* (2, 10, 11).

Elsinburgh dates back nearly a century and is now rarely cultivated, having long since been replaced by better varieties. It is certainly not known in New York now and it is doubtful if it was ever much grown as it fruits very sparingly in the North and is but half hardy in the latitude of this State. In quality it is one of the best of the Aestivalis grapes, having a pure, rich, vinous, spicy flavor without a trace of foxiness. It would

undoubtedly add variety to any amateur's vineyard and might prove of value in grape-breeding, otherwise it is not worth growing; it undoubtedly makes a very good red wine.

The origin of Elsinburgh is very uncertain. It was named after the township, Elsinborough, Salem County, New Jersey. In this neighborhood it was much raised at an early day. From here it was sent to various parts of the country. Whether it originated in this section or whether it was introduced at a still earlier date from elsewhere is unknown. It was brought into notice by a Dr. Hulings. Although Elsinburgh has long since ceased to be of importance, it is still offered for sale by an occasional nurseryman. It was placed on the grape list in the American Pomological Society fruit catalog in 1862 and removed in 1891. Elsinburgh is of especial interest as being the probable parent of Delaware. The variety shows Bourquiniana or Aestivalis in flavor and texture of fruit, in texture and pubescence of leaf, and the bloom on young canes; its tenderness and susceptibility to mildew suggest Vinifera.

Vine weak to moderately vigorous, not very hardy, produces light crops. Canes short to medium, slender, covered with thin blue bloom; tendrils intermittent, bifid to trifid. Leaves small to medium, variable in color; lower surface hairy and slightly pubescent. Flowers nearly fertile, open very late; stamens upright. Fruit ripens early in October. Clusters medium to large, usually single-shouldered, loose to medium. Berries small, roundish, black, covered with blue bloom, contain but little pulp. Flesh vinous, sweet, quality good. Seeds few, small.

ELVICAND.

(Candicans, Riparia, Labrusca.)

1. *An. Hort.*, 1892:176. 2. *Bush. Cat.*, 1894:123. 3. *Am. Pom. Soc. Cat.*, 1897:19. 4. *Tex. Sta. Bul.*, 48:1149, 1156. 1898. 5. *Ib.*, 56:276. 1900.

Introduced some twenty years ago, Elvicand has not found a place in the viticulture of the North. It is interesting because of its parentage, having in it the blood of three species: Riparia, Labrusca and Candicans, and might prove valuable in breeding work, as starting a new and somewhat distinct group of grapes. There has been much complaint of this variety being unproductive but Munson states that this is due to short pruning and that it will bear heavily with very long pruning. It is too late in season for New York.

The variety was originated by T. V. Munson of Denison, Texas, from seed of Elvira accidentally fertilized by pollen of *Vitis candicans*. It was introduced by the originator in 1893, and was placed on the grape list in the American Pomological Society fruit catalog in 1897, where it has since been retained. It was dropped from the originator's catalog eight years ago.

Vine vigorous and hardy. Shoots and under side of leaves showing much white cottony pubescence. Leaves large to medium, shallowly three-lobed. Flowers self-fertile. Clusters small, rather open. Berries of medium size, round, dark purple, somewhat sweet to subacid with slight Candicans flavor. Seeds large. Season late. Not a table grape.

ELVIRA.

(Riparia, Labrusca.)

1. *Mo. Hort. Soc. Rpt.*, 1873:53. 2. *Am. Pom. Soc. Rpt.* 1875:40, 67. 3. *Mass. Hort. Soc. Rpt.*, 1880:237. 4. *Am. Pom. Soc. Rpt.*, 1881:38. 5. *Am. Pom. Soc. Cat.*, 1881:24. 6. *Ill. Hort. Soc. Rpt.*, 1883:75. 7. *Bush. Cat.*, 1883:97. *col. pl. and fig.* 8. Husmann, 1895:83, 93, 175. 9. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555, 559. 1898. 10. *Tex. Sta. Bul.*, 56:270. 1900. 11. *Mo. Hort. Soc. Rpt.*, 1902:82. 12. *Ib.*, 1906:65, 66, 67.

Though it has never attained great popularity in New York or in the North, Elvira, soon after its introduction in Missouri about thirty-five years ago, was carried to the very pinnacle of popularity as a wine grape. The qualities which commended it were its great productiveness, in which character it is hardly surpassed in favorable locations by any other of our native grapes; its earliness, ripening in the North with Concord; its exceedingly good health, being almost free from cryptogamic diseases and having almost no touch of black-rot in the average season even in the Southwest; its great vigor as shown by a strong stocky growth and ample foliage; and, lastly, almost perfect hardiness even as far north as Canada. Its good qualities are offset by one or two defects which have caused it to lose in popularity as time has gone by until now it is not as widely grown as some of its seedlings. The most noticeable of its defects is its thin skin which bursts easily, thus wholly debarring it from distant markets. Beside this, its flavor and appearance, as it grows here, are not sufficiently good to make it a table grape and it can be used only for wine for which purpose it is much valued, though its habit of cracking in the bunch is sometimes much against it as a wine grape. The wine made from Elvira is light, containing comparatively little alcohol, and by those wine-makers who do not dislike a

slight foxiness in flavor, it is considered very good, improving with age and being well adapted for blending with more highly flavored wines.

At the beginning of the reconstruction period in France, Elvira was used more or less as a resistant stock and somewhat as a direct producer but within a few years it was condemned and abandoned for either purpose and is now known in France[1] only in varietal vineyards.

Elvira is a seedling of Taylor, a Riparia-Labrusca hybrid, and shows well the peculiarities and general characters of the group of which Taylor is supposed to be the parent. Of the numerous hybrid Riparia grapes, Elvira seems to have given the best coign of vantage for breeding work and is the parent of a number of worthy pure-bred and cross-bred varieties. While it is to the species to which Elvira belongs that we must look for our hardiest grapes, this variety and most of its progeny are not suited to northern conditions, not because of tenderness to cold, but because they must have a long season for maturity and to attain their best quality. Riparia is largely used as a resistant stock in combating phylloxera, and Elvira and other similar hybrid offspring are almost proof against this pest.

Elvira was originated by Jacob Rommel of Morrison, Missouri, from seed of Taylor which some say was pollinated by Martha. It was planted in 1863 and fruited for the first time in 1869. Bush & Son & Meissner introduced the variety in 1874. It was placed on the grape list of the American Pomological Society fruit catalog in 1881 where it is still retained. Its great popularity in Missouri was largely due to the energy with which it was advertised by certain prominent viticulturists, they having been most favorably impressed with it because of its withstanding the severe cold of the winter of 1873 without protection. Husmann, in particular, spoke of Elvira in the highest terms and recommended its cultivation. Its popularity spread from Missouri to the islands and the Ohio shore of Lake Erie but scarcely reached New York. In all of these regions its culture is now on the wane.

Vine vigorous, hardy, healthy, produces very heavy crops, more productive than Concord. Canes of average length, numerous, medium to below in thickness, rather dark brown, deepening in color at the enlarged and flattened nodes; internodes short

[1] *Traité gen. de vit.*, 6:192. 1903.

ELVIRA

to medium; diaphragm rather thin; pith intermediate in thickness; shoots slightly pubescent; tendrils continuous, of average length, trifid to bifid.

Leaf-buds nearly medium in size, short to medium in length, thick, conical to nearly obtuse, open in mid-season. Young leaves tinged faintly with carmine on the lower side only. Leaves rather large, medium to somewhat thin; upper surface light green, older leaves dull but younger leaves glossy, smooth to medium; lower surface pale green, slightly pubescent, hairy. Veins rather distinct; lobes none to three with terminus acute to acuminate; petiolar sinus deep to medium, inclined to narrow, sometimes closed and overlapping; basal sinus usually lacking; lateral sinus shallow, often notched; teeth medium to rather deep, somewhat wide. Flowers fertile or nearly so, open moderately early; stamens upright.

Fruit ripens about with Concord, does not keep well. Clusters intermediate in size, above medium to short, of average breadth, cylindrical, usually single-shouldered, compact; peduncle short to medium, rather thick; pedicel not long, of average thickness, nearly smooth; brush short, greenish-yellow with brownish tinge. Berries average medium in size, roundish to slightly oblate, often misshapen on account of compactness, greenish with yellow tinge, rather dull, covered with a fair amount of gray bloom, not always persistent, rather firm. Skin very thin, tender, adheres slightly to the pulp, contains no pigment, somewhat astringent. Flesh greenish, juicy, fine-grained, tender, slightly foxy, sweet, not acid at the center, somewhat flat in flavor, of fair quality. Seeds separate easily from the pulp, one to four, average three, medium to nearly large, medium to broad, intermediate in length, blunt, often plump, medium to dark brown; raphe obscure or nearly so; chalaza of average size, slightly above center, pear-shaped, rather distinct. Must 888.

EMPIRE STATE.

(Riparia, Labrusca, Vinifera?)

1. *Am. Pom. Soc. Rpt.*, 1881:66. 2. *Mass. Hort. Soc. Rpt.*, 1882:227. 3. *Ohio Hort. Soc. Rpt.*, 1882:46. 4. *Bush. Cat.*, 1883:99. 5. *Gar. Mon.*, 26:272, 364. 1884. 6. *W. N. Y. Hort. Soc. Rpt.*, 31:110. 1886. 7. *Rural N. Y.*, 46:20, 495. 1887. 8. *Am. Pom. Soc. Rpt.*, 1887:97, 125. 9. *Ohio Hort. Soc. Rpt.*, 1887–8:85, 169. 10. *Mo. Hort. Soc. Rpt.*, 1889:370. 11. *Am. Pom. Soc. Cat.*, 1889:24. 12. *N. Y. Sta. An. Rpt.*, 13:603. 1894. 13. *Bush. Cat.*, 1894:125. 14. *Col. Sta. Bul.*, 29:22. 1894. 15. *Ohio Hort. Soc. Rpt.*, 1894–5:11. 16. *Tenn. Sta. Bul.*, Vol. 9:180. 1896. 17. *N. Y. Sta. An. Rpt.*, 17:530, 541, 544, 548, 552. 1898.

Empire State competes with Niagara, Diamond and Pocklington for supremacy among green grapes in commercial vineyards, probably taking fourth place the country over. The variety is equally vigorous in growth, just as free from predaceous parasites, whether fungi or insects, and upon vines of the same age it is as productive but is a little less hardy and the grapes are not as attractive in appearance as the other varieties named.

In particular the clusters are small in some localities, a defect which can be overcome only by severe pruning or by thinning. The quality is very good, much better than Niagara, somewhat better than Pocklington and nearly as good as Diamond. It approaches the flavor of the Old World grapes, its slight wild taste suggesting one of the Muscats rather than the foxiness of the Niagara. Empire State is esteemed for the table wherever known and is in demand for wine-making, the wine from it being most excellent for champagne according to reports from the Keuka champagne-makers. Empire State ripens a little earlier than Niagara, hangs long upon the vine and keeps well after picking and without losing flavor. The variety is quite distinct in its horticultural as well as its botanical characters.

This somewhat remarkable white grape was originated by James H. Ricketts of Newburgh, New York. The variety was fruited for the first time in 1879. The originator says that it came from seed of Hartford pollinated by Clinton but this parentage has been questioned by many viticulturists as it does not show characters of either of the reputed parents. A very general supposition is that the variety is a hybrid between Clinton and some variety of Vinifera, the characters of the fruit in particular indicating such breeding. Empire State was bought from the originator by George A. Stone of Rochester for $4,000, a record price for an American grape. It was introduced about 1884 and was placed on the grape list of the American Pomological Society fruit catalog in 1889, where it still remains.

Vine a fair to good grower, usually healthy, in some locations appears somewhat tender, moderately productive to productive. Canes short, medium to few, nearly slender, brownish; nodes slightly enlarged, not flattened; internodes short to medium; diaphragm of average thickness; pith of medium size; shoots pubescent; tendrils intermittent, intermediate in length, bifid.

Leaf-buds small to medium, of average length, rather slender, pointed to conical, open moderately late. Young leaves tinged with faint trace of red on under side, prevailing color greenish. Leaves small to medium, of fair thickness; upper surface light green, slightly glossy, smooth to somewhat rugose; lower surface tinged with bronze, heavily pubescent; veins distinct; lobes three to five when present, with terminal lobe acuminate; petiolar sinus medium to deep, narrow, often closed and overlapping; basal sinus variable in depth and width; lateral sinus deep, narrow to medium, often distinctly enlarged at base; teeth medium to deep, above average width. Flowers fertile, open moderately late; stamens upright.

EMPIRE STATE

Fruit somewhat variable in season of ripening averaging a few days earlier than Niagara, keeps well. Clusters large to below medium, long, rather slender, cylindrical to slightly tapering, frequently single-shouldered, medium to compact; peduncle variable, often characteristically long, rather thick; pedicel not uniform in length, slender, covered with numerous small warts; brush short, light green. Berries variable in size averaging medium to below, inclined to roundish, pale yellowish-green, covered with some gray bloom, persistent, moderately firm. Skin medium to thick, variable in toughness, adheres but slightly to the pulp, contains no pigment, with slight astringency. Flesh pale yellowish-green, translucent, very juicy, fine-grained, rather tender, sweet next the skin but somewhat acid at center, agreeably flavored, good to very good in quality. Seeds adhere slightly to the pulp, one to four, average two, small, broad, notched, rather short, blunt, plump, brownish; raphe obscure; chalaza small, roundish to ovate, slightly above center, distinct.

ESSEX.

(Labrusca, Vinifera.)

1. *U. S. D. A. Rpt.*, 1864:127, 136. 2. *Mass. Hort. Soc. Rpt.*, 1865:40. 3. Strong, 1866:341. 4. *Am. Jour. Hort.*, 3:146. 1868. 5. *Horticulturist*, 24:126. 1869. 6. *Am. Pom. Soc. Cat.*, 1869:42. 7. *Grape Cult.*, 1:181. 1869. 8. *Ill. Sta. Bul.*, 28:254. 1893. 9. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555. 1898.

Rogers' No. 41 (1, 2, 3, 4). *Rogers' No. 41* (5, 6, 7).

When well grown Essex is so similar to Barry, Wilder and Herbert, all being Rogers' hybrids, that it is doubtful if it is worth cultivation more especially as it is not as easily grown as the above sorts. Its fruit is almost identical with Barry, though the bunches do not equal that variety in size, but the vine is not as desirable, being only half-hardy, not productive, with sterile flowers and not setting fruit well even in mixed vineyards.

For an account of the origin and parentage of Essex see "Rogers' Hybrids." Essex, then known as *Rogers' No. 41*, is first mentioned separately from the other hybrids about 1865. There appears to have been some confusion in the numbers, as some of the early describers speak of the grape as red, others black. The name Essex was given by Mr. Rogers in 1869, in honor of Essex County, Massachusetts. The same year it was placed on the grape list of the American Pomological Society fruit catalog, where it was retained until 1895, when it was dropped. It is still to be found in many varietal vineyards but is now offered for sale by but few nurserymen.

Vine vigorous, not always hardy, produces good crops. Canes vigorous, intermediate in number and thickness; tendrils continuous to intermittent, trifid to bifid. Leaves medium to above in size, irregularly roundish; lower surface thinly pubescent. Flowers sterile or nearly so, open in mid-season or slightly later; stamens reflexed. Fruit ripens about with Concord or slightly later, an excellent keeper, in good condition some seasons until February. Clusters medium to nearly large, broad with a rather small, short, single shoulder, usually compact. Berries large to above medium, roundish to oval, frequently compressed, dark purplish-black, covered with abundant blue bloom, not firm. Flesh moderately tender and soft, vinous, sweet next the skin to acid at center, agreeable in flavor, good to very good in quality. Seeds large, long, often with enlarged neck; chalaza small, frequently with shallow, radiating furrows, strongly above center.

ESTER.

(Labrusca.)

1. *An. Hort.*, 1889:101. 2. *Rural N. Y.*, 51:686, 863. 1892. 3. *Bush. Cat.*, 1894:125. 4. *N. Y. Sta. An. Rpt.*, 14:279. 1895. 5. *Ib.*, 17:530, 548, 555. 1898. 6. *Mich. Sta. Bul.*, 194:57. 1901. 7. *Kan. Sta. Bul.*, 110:239. 1902.

Ester is a white seedling of Concord, whether pure-bred or cross-bred is not known, which resembles its parent in vine and in flavor of fruit. It has several defects which make it less valuable than many other better known white grapes and is therefore not recommended for New York Its defects appear in the description given below.

The variety was originated by E. W. Bull of Concord, Massachusetts, from seed of Concord. It was introduced by George S. Josselyn of Fredonia, New York, in 1889. Bull named this variety in honor of his mother who spelled her name Ester, in the old New England way, and not "Esther" as commonly found in grape literature.

Vine variable in vigor and productiveness, usually hardy. Canes short to medium, slender, covered with considerable pubescence; tendrils continuous, rarely intermittent, bifid to trifid. Leaves small, light green; lower surface tinged with bronze, pubescent. Flowers nearly fertile, open in mid-season; stamens upright. Fruit ripens about with Concord, not a good keeper. Clusters medium to above in size and compactness. Berries medium to large, roundish, pale yellowish-white, covered with thin gray bloom, inclined to drop considerably from pedicel. Skin covered with scattering brown dots, thin, somewhat tender, inclined to crack. Flesh moderately tender and vinous, sweet, variable in flavor and quality ranging from fair to very good.

ETTA.

(Riparia, Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1881:33. 2. *Mo. Hort. Soc. Rpt.*, 1883:43. 3. *Bush. Cat.*, 1883:98. *fig.* 4. *Kan. Hort. Soc. Rpt.*, 1890:23, app. 5. *N. Y. Sta. An. Rpt.*, 10:496. 1891. 6. *Ill. Sta. Bul.*, 28:263. 1893. 7. *Ark. Sta. Bul.*, 39:30. 1896. 8. *N. Y. Sta. An. Rpt.*, 17:530, 545, 547, 555, 559. 1898. 9. *Tex. Sta. Bul.*, 48:1149, 1156. 1898. 10. *Mich. Sta. Bul.*, 177:44. 1899. 11. *Ga. Sta. Bul.*, 53:43. 1901. 12. *Kan. Sta. Bul.*, 110:244. 1902.

Elvira Seedling No. 3 (3). ROMMEL'S ETTA (4, 12). *Rommel's No. 3* (1).

In appearance, taste and texture of flesh Etta is very similar to Elvira of which it is a seedling. The small yellowish clusters which characterize Elvira are almost exactly reproduced in Etta differing chiefly in often having a shoulder quite as large as the main bunch itself, and in having, for most palates, a better flavor, lacking the slight foxiness of Elvira. The vine is very vigorous, hardy, and productive to a fault. The fruit ripens late, at the time of Catawba, and too late to make the variety of value for New York. Etta is not a good table grape and, as with its parent, makes only a fair grade of white wine but this can be produced in such quantity as to give the variety value in producing a wine for blending with more highly flavored products.

The tendency of Elvira to crack and overbear caused the originator of that variety, Jacob Rommel of Morrison, Missouri, to try for a grape without these faults and the result was Etta from seed of Elvira. It was first exhibited in 1879 as *Elvira Seedling No. 3* and was awarded the premium as a seedling wine grape at the Mississippi Valley Horticultural Society meeting in St. Louis in 1880. It has never become popular in the East, probably on account of its late ripening. In Missouri Etta is generally considered to be, all characters taken into account, a better grape than Elvira, falling below it in but one particular, resistance to black-rot.

Vine vigorous to very vigorous, hardy except in severe winters, productive. Canes long, rather numerous, about average size, nearly light to medium dark brown; tendrils continuous, bifid. Leaves healthy, above medium to large, thickish; upper surface dark green, slightly glossy, nearly smooth; lower surface pale green, somewhat cobwebby; veins rather distinct. Flowers fertile or nearly so, open medium early; stamens upright.

Fruit ripens late, two or three weeks after Concord, keeps fairly well. Clusters medium to small, rather short and broad, irregularly cylindrical, usually with a short,

medium-sized single shoulder but sometimes so heavily shouldered as to form a double bunch, very compact. Berries medium to small, roundish to frequently compressed on account of compactness of cluster, rather pale green, sometimes with a faint yellow tinge, dull, covered with thin gray bloom, shatter considerably when overripe, firm. Skin thin, tender, contains no pigment. Flesh juicy, fine-grained, somewhat tough and stringy, slightly foxy, neither rich nor high-flavored, sweet at skin to tart at center, mild, intermediate in flavor and quality. Seeds separate from the pulp quite easily, medium to above in size and width, long to medium, somewhat plump and blunt, brownish; raphe buried in a broad, shallow groove; chalaza of medium size, oval, nearly central, moderately distinct.

EUMELAN.

(Labrusca, Vinifera, Aestivalis.)

1. *Rec. of Hort.*, 1866:38. 2. Mead, 1867:220. 3. Fuller, 1867:241. 4. *Am. Jour. Hort.*, 8:144, 299. 1870. 5. Barry, 1872:418. 6. *Mich. Pom. Soc. Rpt.*, 1872:543, 555. 7. *Ill. Hort. Soc. Rpt.*, 1875:393. 8. *Am. Pom. Soc. Cat.*, 1875:24. 9. *Bush. Cat.*, 1883:99. *fig.* 10. *Wis. Hort. Soc. Rpt.*, 1885:174. 11. *W. N. Y. Hort. Soc. Rpt.*, 36:43. 1891. 12. *Va. Sta. Bul.*, 94:134. 1898. 13. *N. Y. Sta. An. Rpt.*, 17:530, 545, 546, 548, 549, 552. 1898. 14. *Tex. Sta. Bul.*, 56:271. 1900.

WASHINGTON (1). *Washington* (3).

Eumelan was introduced about forty years ago, with the general opinion among the leading viticulturists of the time that it was one of the best black grapes that had been brought to the notice of grape-growers. It seems now, as one studies its characters, to show an association of as great a number of valuable good qualities and as few objectionable ones as almost any other of our black grapes, yet the variety is now but little grown. Briefly summarized, its good qualities are: Vines above the average in vigor, hardiness and productiveness, remarkable for their short-jointed wood; clusters and berries well-formed, of good size and the latter a handsome black with fine bloom, making a very attractive cluster of grapes; flesh tender, seemingly dissolving into wine-like juice under slight pressure; the flavor is pure without a trace of foxiness, rich, sweet, and vinous, making a very delicious and refreshing fruit, though the large seeds are somewhat objectionable. Eumelan makes a very good red wine. The season of ripening is such that the variety may be called early, yet it keeps much better than most of the other grapes maturing with it and becomes, therefore, a mid-season and late grape as well as an early one. It neither cracks nor shells badly, and ships very well.

It is more difficult to name its defects. So far as we can discover,

EUMELAN

these are susceptibility to mildew, sterile flowers, and difficulty in propagation. Unquestionably the latter character has greatly hindered its culture, as the vines can be had only at extra expense and nurserymen are loath to grow it at all. Eumelan can at least be recommended to amateur growers and for the garden and it is well worth further trial by grape-growers.

Eumelan is a chance seedling which grew from seed about 1847 in the yard of a Mr. Thorne at Fishkill Landing, New York. About 1860 it fell into the hands of Dr. C. W. Grant of Iona Island and was introduced by him in 1867. By some it is supposed to be a seedling of Isabella. Bush gives the species as Aestivalis. Munson states, however, that he can see nothing in it but Labrusca and Vinifera. Labrusca seems to be indicated very plainly by the texture of the fruit and by the seeds, Vinifera possibly by a general appearance of the vine difficult to define and also by the tendency to mildew. Besides this, however, there are the bluish bloom on shoots and canes, the pigment beneath the skin, the spicy taste in the berries, and the difficulty of propagation from cuttings, all of which are difficult to account for except by recognizing the presence of Aestivalis or Bicolor blood.

Vine vigorous to medium, hardy, medium to productive, inclined to mildew. Canes intermediate in length, numerous, of average thickness, covered with considerable blue bloom; nodes enlarged, flattened; internodes short to medium; diaphragm thick; pith about medium size; shoots glabrous; tendrils intermittent, rather long, trifid to bifid.

Leaf-buds large, long, rather thick, conspicuous, obtuse to conical, open in mid-season. Young leaves heavily tinged on under side and lightly tinged along margin of upper side with bright carmine. Leaves medium to large, of average thickness; upper surface rather dark green, glossy, smooth to medium; lower surface pale green, not pubescent; veins distinct; lobes usually three in number with terminal lobe acute to acuminate; petiolar sinus medium to deep, variable in width; basal sinus usually lacking; lateral sinus shallow to medium, rather narrow or often a mere notch; teeth inclined to shallow, usually above medium in width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit ripens before mid-season, keeps frequently until late winter. Clusters of average size, long to medium, rather slender, slightly tapering to cylindrical, often with a long, loose, single shoulder, variable in compactness; peduncle medium to long, of average size; pedicel somewhat short, rather slender, covered with few small warts, wide at point of attachment to fruit; brush short, stubby, pale green. Berries medium in size, roundish to frequently compressed, black, glossy, covered with abundant blue

bloom, persistent, firm. Skin intermediate in thickness, tough, rather adherent to the pulp, contains a moderate amount of wine-colored pigment, slightly astringent. Flesh somewhat dark green, juicy, fine-grained, nearly tender, stringy, not foxy, rather spicy and aromatic with Aestivalis flavor, sweet, ranks good or higher in quality. Seeds adhere slightly to the pulp, one to four, average three, above medium to large, rather wide, intermediate in length, somewhat blunt, plump, brownish; raphe obscure; chalaza oval to circular, slightly above center, rather distinct. Must 93°–100°.

(I) EUREKA.

(Labrusca.)

1. *Mag. Hort.*, 27:6. 1861. 2. *Gar. Mon.*, 6:371. 1864. 3. *Mag. Hort.*, 33:205. 1867. 4. *Am. Hort. An.*, 1871:80. 5. *Bush. Cat.*, 1883:98.

Bogue's Eureka (2).

No good descriptions of this variety are extant, and it does not appear to have been widely tested. Eureka resembles the Isabella very closely in both fruit and vine. The fruit ripens about two weeks earlier, is somewhat more tender in pulp, more compact in the bunch, and with the vine of greater vigor.

Eureka was originated by S. Folsom of Attica, Wyoming County, New York, some time in the fifties, and was introduced a few years later by Bogue & Son, nurserymen, of Genesee County. It is said to be a seedling of Isabella, resembling the parent very closely, except for being earlier in ripening. It is now practically out of cultivation, and was never superior to its reputed parent in desirable characters.

(II) EUREKA.

(Bourquiniana, Labrusca, Vinifera.)

1. *Mo. Hort. Soc. Rpt.*, 1889:372. 2. *Ib.*, 1890:156. 3. *Ib.*, 1891:128. 4. *Ib.*, 1892:268. 5. *Am. Gard.*, 13:85. 1892. 6. Husmann, 1895:33.

The second variety to receive the name Eureka is said to be a seedling of Delaware raised by Dr. Stayman some time about 1880. It does not appear ever to have been disseminated except to a few of Dr. Stayman's personal friends. It is very rare in varietal vineyards and hardly known to nurserymen. The variety as it grows in New York is surpassed by its parent in practically all desirable horticultural characters.

Vine a strong grower, usually rather tender, produces medium to good crops. Canes long, numerous, slender; tendrils intermittent, bifid to trifid. Leaves medium to above

in size, variable in color; lower surface pale green; pubescence often distributed in flecks. Fruit ripens soon after Concord, does not keep well. Clusters above medium to medium in size and length, single-shouldered to sometimes double-shouldered, of average compactness. Berries intermediate in size, roundish, attractive dark red, covered with heavy lilac or slightly blue bloom, inclined to shell somewhat from pedicel. Skin thin, rather tender, inclined to crack. Flesh moderately juicy and tough, aromatic, nearly sweet next the skin to acid at center, vinous, desirable in flavor, good in quality. Seeds small to medium, of average width and length, nearly sharp-pointed.

EXCELSIOR.

(Vinifera, Labrusca.)

1. *Mass. Hort. Soc. Rpt.*, 1880:237. 2. *Bush. Cat.*, 1883:100. 3. *Miss. Sta. An. Rpt.*, 3:36. 1890. 4. *Tex. Sta. Bul.*, 48:1150, 1156. 1898.

According to the originator, James H. Ricketts, Excelsior was "the finest grape in his collection." The grapes are delicious, having the flavor of Black Hamburg; the flesh characters are good, the pulp being melting and juicy yet holding together and having sugar enough to give keeping quality; neither seeds nor skins are objectionable; the grapes are handsome in appearance; but unfortunately the variety ripens too late to make it of much value in New York. At best it is suitable only for the amateur and, as with all of the varieties which Ricketts sent out, it is adapted to few localities and must have the best care in all respects.

Excelsior came from seed of Iona fertilized with pollen of some unknown Vinifera. The variety was introduced in the autumn of 1882. Excelsior is to-day rather rare in varietal vineyards and is apparently not offered for sale by any nurserymen.

Vine moderately vigorous, not always hardy, medium to productive. Canes long, numerous, rather thick; tendrils intermittent, bifid. Leaves large to below medium, sometimes rugose; lower surface pubescent. Fruit ripens later than Concord, keeps well. Clusters unusually large, long, broad, frequently with a heavy double shoulder, loose. Berries large to medium, oval to nearly roundish, dark red covered with thin lilac bloom, very persistent, rather soft. Skin thick, tough, adheres considerably to the pulp. Flesh very juicy, rather soft, granular, sweet and sprightly, high in flavor, good to best in quality, closely resembling Black Hamburg in many characters. Seeds medium in size, rather blunt, sometimes with a short enlarged neck.

FAITH.

(Riparia, Labrusca.)

1. *Ill. Hort. Soc. Rpt.*, 1881:164. 2. *Bush. Cat.*, 1883:100. 3. *Mo. Hort. Soc. Rpt.*, 1883:43. 4. *Rural N. Y.*, 45:622, 640. 1886. 5. *Ind. Hort. Soc. Rpt.*, 1889:85. 6. *N. Y. Sta. An. Rpt.*, 11:623. 1892. 7. *Ill. Sta. Bul.*, 28:263. 1893. 8. *Tenn. Sta. Bul.*, Vol. 9:180. 1896. 9. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555. 1898.

Though spoken of as a desirable grape in many other regions Faith is of little or no value in New York. It is very unattractive in appearance as it grows in this State, both in cluster and in berry, the clusters being small and variable and the berries small and of unattractive color. The quality of the fruit is not high and there are many other white sorts which surpass it as a table grape, more especially Diamond which ripens at the same time. If it has any preeminently good character for this region it is productiveness but this cannot offset its mediocre characters. Another fault is that the blossoms put forth so early that they often suffer from spring frosts.

Faith is of the same breeding and from the same originator, Jacob Rommel of Morrison, Missouri, as Etta, both having come from seed of Elvira. This seedling was introduced to the public about 1881 and though an excellent grape it is hardly the equal of Etta and has never been able to compete with that variety. It was named in honor of Jacob Faith, a prominent Missouri viticulturist.

Vine medium to vigorous, hardy except in severe winters, usually healthy, variable in productiveness. Canes long to medium, numerous; tendrils continuous, bifid. Leaves large to medium, dark green; lower surface grayish-green, thinly pubescent. Flowers sterile to partly fertile, open medium early; stamens upright. Fruit ripens about with Diamond or slightly earlier, does not keep well. Clusters above medium to small, variable in length, usually slender, often heavily single-shouldered, loose. Berries quite small, roundish, dull green, frequently with yellow tinge changing to pale amber, covered with abundant gray bloom, persistent, rather soft. Flesh moderately juicy, nearly tender, agreeably flavored, sweet next the skin to somewhat tart at center, fair to good in quality. Seeds numerous, of average size, broad.

FERN MUNSON.

(Lincecumii, Vinifera, Labrusca.)

1. *N. Y. Sta. An. Rpt.*, 11:623. 1892. 2. *Bush. Cat.*, 1894:127. 3. Husmann, 1895:130. 4. *Kan. Sta. Bul.*, 73:182, 184. 1897. 5. *Ill. Hort. Soc. Rpt.*, 1897:206. 6. *Va. Sta. Bul.*, 94:134. 1898. 7. *Tex. Sta. Bul.*, 48:1150, 1157. 1898. 8. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555. 1898. 9. *Am. Pom. Soc. Cat.*, 1899:29. 10. *Tex. Sta. Bul.*, 56:277. 1900 11. *Kan. Sta. Bul.*, 110:247. 1902. 12. *Mo. Hort. Soc. Rpt.*, 1904:302, 305.

Admirable (11). FERN (2, 5). *Fern Munson* (2). *Hilgarde* (4). *Munson's No. 76* (4).

Fern Munson is not adapted to northern regions, forty degrees north latitude being its limit of adaptation according to Munson,[1] its originator. Nevertheless when it has ripened in New York the fruit has shown some very good characters, as attractive appearance, agreeable quality, and unobjectionable seeds and skin. The vines are vigorous and productive but the foliage is not remarkably healthy in the Station vineyard though it has been very abundant.

This variety was originated by T. V. Munson of Denison, Texas, from seed of Post-oak which has been variously stated to have been pollinated by Triumph, mixed pollen of Triumph and Herbemont, and by Catawba. Which of these is correct we cannot say. The seed was planted in 1885 and the variety was introduced by the originator in 1893. It was placed on the grape list of the American Pomological Society fruit catalog in 1899, where it still remains. Dickens, of Kansas, states that this variety was formerly disseminated under the name of Admirable but this appears to be a mistake as Admirable is invariably given as having recurved stamens while the stamens of Fern Munson are erect.

Vine vigorous, not always hardy, usually produces as good or sometimes better crops than Concord. Canes long, medium or above in number, medium to thick, rather dark brown with faint red tinge; tendrils intermittent, bifid. Leaves large and thick; upper surface rugose and often heavily wrinkled; lower surface dull, pale green with slight bronze tinge, faintly pubescent; veins quite obscure. Flowers semi-fertile, open very late; stamens upright.

Fruit ripens later than Concord, appears to keep well. Clusters medium to large, not very long, variable in width, irregularly tapering to rather cylindrical, usually single-shouldered, variable in compactness, often with many abortive fruits. Berries medium to large, roundish to slightly flattened, dark purplish-black, rather glossy,

[1] *Cat.*, 1907–8:18.

covered with thin blue bloom, strongly persistent, firm. Skin thin, tough, contains a small amount of wine-colored pigment, rather astringent. Flesh juicy, tough and solid, becoming tender as it reaches maturity, fine-grained, vinous, briskly sub-acid to acid, ranking good in quality when properly ripened. Seeds adhere somewhat to the pulp, medium in size, rather broad, of average length; raphe shows as a small cord; chalaza central to slightly above center, obscure.

FLORENCE.

(Labrusca, Vinifera, Bourquiniana?)

1. *Bush. Cat.*, 1894:127.

The fact that the Florence here described has been discarded by all vineyardists is presumptive evidence that the variety has little intrinsic value and this proves to be the case in New York. Neither fruit nor vine characters are such that the Station can recommend it. It is doubtful if the variety is longer worthy of preservation.

Florence is one of the productions of A. J. Caywood of Marlboro, New York, from seed of Niagara pollinated by Dutchess. But little is known of its time of origin or of its introduction. It is very rare in varietal vineyards and not known to nurserymen.

Canes medium to above in length, often somewhat slender, slightly roughened and pubescent; tendrils intermittent, bifid. Stamens upright. Fruit ripens slightly earlier than Niagara, does not keep well. Clusters above medium in size, rather long to medium, sometimes slightly single-shouldered, loose. Berries large to above medium, roundish, green often with tinge of yellow, covered with thin gray bloom, nearly persistent. Flesh slightly tough and solid, aromatic, agreeably sweet next the skin to rather tart at center, good to very good in quality. Seeds few, intermediate in size and length, plump.

GAERTNER.

(Vinifera, Labrusca.)

1. *U. S. D. A. Rpt.*, 1863:548. 2. *Horticulturist*, 24:126. 1869. 3. *Am. Jour. Hort.* 5:263. 1869. 4. *Bush. Cat.*, 1894:127. 5. *Tenn. Sta. Bul.*, Vol. 9:180. 1896. 6. *Va. Sta. Bul.*, 94:137. 1898. 7. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555, 559. 1898.

Rogers' No. 14 (1). *Rogers' No. 14* (2, 3, 4, 5).

When at its best Gaertner is probably surpassed in appearance and in quality by no other one of Rogers' hybrids. Fruit and clusters are large and handsomely colored making a showy grape which attracts attention

wherever shown and which sells in fancy fruit stores at the highest price. The plant is vigorous, productive, and as hardy as any of the primary hybrids between Labrusca and Vinifera. In view of its good qualities Gaertner has not received the attention it deserves from either the amateur or the commercial grape-grower, probably because it is more capricious as to soils than some others of its related hybrids and that to have it in perfection it must have the very best care. As a market grape it has the faults of ripening somewhat unevenly and of shipping rather poorly because of a thin tender skin. As with nearly all of the hybrids of its kind it keeps well and this, with the desirable qualities above noted, makes it a splendid grape for the home vineyard where in favorable situations it may be expected to bear annual crops of most excellent grapes. Gaertner is often compared with Massasoit, the two varieties being very similar in fruit characters, but Gaertner is of distinctly better quality than Massasoit.

Gaertner was originated by E. S. Rogers of Salem, Massachusetts, and the early history of the variety will be found under "Rogers' Hybrids." It was first mentioned separately from the other seedlings of Rogers about 1865 under the name *Rogers' No. 14.* In 1869, at the request of the Lake Shore Grape Association, Rogers gave names to certain of his productions which had previously been known by numbers only. One of the varieties then named was Gaertner, in honor of the German botanist of this name. It has never been as popular as some of the other Rogers' hybrids and is to-day offered for sale by but few nurserymen.

Vine medium to vigorous, usually hardy except in severe winters, produces fair to good crops. Canes rather long; intermediate in number, medium to below in size, vary in color from dark reddish-brown to ash-gray tinge, surface covered with thin blue bloom; tendrils continuous, bifid to trifid. Leaves medium to above in size, often rather roundish; upper surface moderately dark green, intermediate in thickness; lower surface pale green, pubescent; veins distinct. Flowers sterile, open moderately late; stamens reflexed.

Fruit ripens about with Concord, matures unevenly, keeps only fairly well. Clusters above medium to medium in size, short to medium, cylindrical to slightly tapering, usually with a fair-sized single shoulder but sometimes double-shouldered, rather loose, with many abortive fruits. Berries large to below medium, roundish to sometimes slightly oval, light to dark red, rather glossy, covered with a moderate amount of lilac

bloom, persistent, intermediate in firmness. Skin medium to thin, inclined to tender, contains no pigment. Flesh very pale green, juicy, fine-grained, somewhat tough, slightly stringy, agreeably vinous, sweet at skin to tart at center, good to very good in quality. Seeds separate from the pulp rather easily, large to above medium, intermediate in length, broad to medium, distinctly notched, sometimes with a very short enlarged neck, brownish; raphe obscured in a deep groove; chalaza of average size, above center to nearly central, oval to roundish, somewhat obscure.

GENEVA.

(Vinifera, Labrusca.)

1. *An. Hort.*, 1889:101. 2. *Rural N. Y.*, 48:49, 50, *fig.*, 165. 1889. 3. *W. N. Y. Hort. Soc. Rpt.*, 35:180. 1890. 4. *N. Y. Sta. An. Rpt.*, 9:330. 1890. 5. *Rural N. Y.*, 50:691. 1891. 6. *Ib.*, 51:607, 655. 1892. 7. *N. Y. Sta. An. Rpt.*, 11:623. 1892. 8. *Rural N. Y.*, 52:71, 122, 655. 1893. 9. *Bush. Cat.*, 1894:128. 10. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555. 1898. 11. *Mich. Sta. Bul.*, 169:170. 1899.

Jacob Moore's Geneva is another secondary hybrid between Labrusca and Vinifera in which the Labrusca blood predominates. In quality it is somewhat below any of the other grapes put out by Moore and is surpassed by so many other grapes of its season that it has never become popular though it has much to recommend it. Thus it is vigorous, though not quite hardy, only fairly productive, with ample foliage which is very healthy. The berries and clusters are attractive. The color is more nearly transparent than any other of our grapes and there is so little bloom that the grapes are a beautiful lustrous green often becoming iridescent in sunlight. It is pure in flavor but somewhat insipid. The berries cling well to the stem and the fruit keeps exceptionally well.

Geneva was originated by Jacob Moore, Brighton, Monroe County, New York, from seed planted in 1874 of a hybrid vine fertilized by Iona. The maternal vine was from seed of a wild Labrusca fertilized with Muscat Alexandria. The variety was introduced by the R. G. Chase Company, of Geneva. It is still quite commonly found in varietal vineyards and is listed by a few grape nurserymen. Geneva seems to have succeeded somewhat better to the south of New York and is notably better in quality when grown in lower latitudes.

Vine moderately vigorous to vigorous, not very hardy, healthy, produces smaller crops than Concord. Canes intermediate in length and number, covered with slight blue bloom; tendrils intermittent to continuous, bifid to trifid. Leaves medium in size,

light green; lower surface grayish-white, pubescent. Flowers nearly sterile to partly fertile, open medium late; stamens upright. Fruit ripens soon after Niagara, ships well and keeps into the winter. Clusters medium to above in size, of average width, often blunt at ends, usually not shouldered, intermediate in compactness, with many abortive fruits. Berries medium to large, slightly oval or obovate, dull green changing to a faint yellow tinge, covered with thin gray bloom. Flesh pale green, tender and soft, vinous, nearly sweet at skin to tart at center, fair to good in quality but not equal to some other white grapes of the same season. Seeds intermediate in size and length.

GLENFELD.[1]

(Labrusca.)

1. *N. Y. Sta. An. Rpt.*, 11:624. 1892. 2. *Am. Pom. Soc. Cat.*, 1897:19. 3. *N. Y. Sta. An. Rpt.*, 17:530, 548, 555. 1898.

Grown in the Station vineyard since 1889, Glenfeld has made a somewhat favorable impression because of its excellent quality but it seems not to have been well received throughout the State and it is doubtful if it has more than a local reputation about the place of its origin. It is equaled or surpassed, however, by many other varieties of its season in vine characters and there is therefore little need that it should be longer perpetuated, though it may be worthy a place in the garden.

Glenfeld was found on the place of George J. Magee of Watkins, New York. Mr. Magee reports that the vine was on the place when he purchased it and the former owner knew nothing of it. The variety was locally supposed to be a seedling of Concord. It was sent to this Station for testing in 1889. For some reason it was placed upon the grape list of the American Pomological Society fruit catalog for 1897. Such action was hardly justified, as the variety had never been tested except in one or two neighborhoods, and it was taken off at the next meeting.

Vine vigorous, hardy except in severe winters, produces good crops. Canes long, numerous to medium, intermediate in thickness; tendrils continuous to intermittent, bifid to trifid. Leaves often very large, variable in color, medium to thick; lower surface tinged with bronze, strongly pubescent. Flowers nearly fertile, open in mid-season or earlier; stamens upright. Fruit ripens early in October, keeps fairly well. Clusters large to below medium, variable in shape, usually with a medium-sized single shoulder,

[1] This variety was named Glenfeld by Mr. Magee, its originator, not Glenfield as it is frequently spelled.

not uniform in compactness. Berries nearly large to below medium, roundish, unique in color being a rather dull olive green covered with ash-gray bloom, somewhat inclined to shatter. Flesh tender, vinous, with an agreeable flavor, sweet at skin to tart at center, good in quality. Seeds medium to below in size, broad.

GOETHE.

(Vinifera, Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1860:86. 2. *Mass. Hort. Soc. Rpt.*, 1861:68. 3. *Horticulturist*, 18:98, 99. 1863. 4. *U. S. D. A. Rpt.*, 1867:160. 5. *Am. Pom. Soc. Cat.*, 1867:44. 6. *Horticulturist*, 24:126. 1869. 7. *Am. Jour. Hort.*, 5:261. 1869. 8. *Grape Cult.*, 1:43, 150, 180, 239, 241, *fig.*, 242, 296. 1869. 9. *Am. Pom. Soc. Rpt.*, 1881:38, 162. 10. *Bush. Cat.*, 1883:101, *fig.*, 102. 11. *Tex. Sta. Bul.*, 48:1150, 1157. 1898. 12. *Mo. Sta. Bul.*, 46:39, 43, 44, 45, 50, 54. 1899. 13. *Miss. Sta. Bul.*, 56:14. 1899

Rogers' No. 1 (1, 2, 3, 4, 5). *Rogers' No. 1* (6, 7, 8, 10).

Of all Rogers' hybrids Goethe shows most of the Vinifera characters, resembling in appearance to a marked degree the White Malaga of European fame and not falling far short of the best Old World grape in quality. This is when it is well grown; but here lies the fault with Goethe, for it is most difficult to grow well especially in the North where the seasons are usually not long enough for its full maturity. When it does ripen in northern latitudes it is unsurpassed in flavor by any other of the grapes of its class. The vine is hardy in New York; vigorous to a fault, for in very rich soils it makes too great a growth; it does best in sands or gravels; it is fairly immune to mildew, rot and other diseases; and where it succeeds often bears so freely that thinning becomes a necessity. Added to its high quality, which makes it a splendid table grape, Goethe keeps well, lasting long into the winter. It is excellent for wine though it is too difficult to grow to make it profitable for this purpose. Unfortunately this variety ripens so late that it cannot be recommended for New York. The accompanying color-plate does not do the variety full justice as good specimens could not be obtained for illustration in the unfavorable season of 1907. Neither size, nor shape of cluster, nor color of fruit are quite as we should like to have them shown.

E. S. Rogers of Salem, Massachusetts, produced Goethe as one of his famous Labrusca-Vinifera hybrids and for its early history the reader is referred to "Rogers' Hybrids." It is first mentioned separately from others of these productions in 1858 under the name *Rogers' No. 1.* It was

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placed upon the grape list of the American Pomological Society fruit catalog in 1867, where it still remains. In 1869 Mr. Rogers named the grape Goethe after the great German poet and naturalist. While highly esteemed in the North, it succeeds better and is therefore more commonly grown in the Middle and South Atlantic States and in the valleys of the Ohio and of the lower Missouri.

Vine vigorous to medium, hardy, variable in productiveness, somewhat subject to mildew in unfavorable locations. Canes above medium to short, of average number and thickness, rather dark brown; nodes enlarged, slightly flattened; internodes very short; diaphragm thick; pith below medium in size; shoots strongly pubescent; tendrils continuous with tendency to intermittent, rather long, bifid to trifid.

Leaf-buds intermediate in size, length and thickness, conical to nearly obtuse, open very late. Young leaves tinged lightly on under side and along margin of upper side with rose-carmine. Leaves variable in size, irregularly roundish, medium to somewhat thin; upper surface light green, glossy, of average smoothness; lower surface pale green to bronze, pubescent, veins very distinct; leaf usually not lobed, with terminus broadly acute; petiolar sinus of average depth, narrow, closed and frequently overlapping; basal sinus usually lacking; lateral sinus shallow, often a mere notch; teeth shallow to medium, rather narrow. Flowers partly fertile, open in mid-season; stamens upright.

Fruit ripens considerably later than Concord, keeps unusually well. Clusters intermediate in size, short to medium, rather broad, widely tapering, frequently single-shouldered, usually two bunches to a shoot, intermediate in compactness; peduncle short to medium, of average thickness; pedicel nearly long, thick, covered with numerous, conspicuous warts, wide at point of attachment to berry; brush long, slender to stout, pale green to yellowish-brown. Berries very large to above medium, oval to nearly roundish, pale red, covered with thin gray or slightly lilac bloom, persistent, of average firmness. Skin thin, tender to medium, adheres slightly to the pulp, contains no pigment, faintly astringent. Flesh pale green, translucent, inclined to tenderness, rather coarse, nearly sweet at skin but decidedly tart at center, with some Vinifera sprightliness, ranking good to very good in quality, does not reach its best flavor in many localities in this State. Seeds separate from the pulp with difficulty unless fully ripe, one to three, average two, large, long, of average thickness, very slightly notched, inclined to bluntness, brownish; raphe obscure; chalaza of fair size, decidedly above center, pear-shaped, distinct. Must 78°.

GOFF.

(Labrusca, Vinifera, Aestivalis.)

During the quarter century the New York Agricultural Experiment Station has been in existence, the breeding of grapes has been one of the

chief lines of horticultural work. Professor E. S. Goff, the first Station horticulturist, began this work as early as 1885 and produced a number of seedling grapes which were numbered but not named. In continuing this work, Professor S. A. Beach, successor to Professor Goff, planted seed from some of the original seedlings and from one of these came a somewhat remarkable grape to which we have given the name Goff. This new variety first bore fruit in 1898 and at once attracted attention. In 1901 it was awarded a silver medal as a meritorious seedling at the Pan-American Exposition. Specimens of it sent to several viticultural experts were highly spoken of and in the years it has been in fruit on the Station grounds it has made a most excellent record.

Unfortunately the pedigree of this grape can never be known. Not only were the parents of the original seedling unknown, but the immediate parent was open to cross-pollination in a vineyard of many varieties. All who have examined the fruit and vines of Goff are well agreed that the variety shows very distinctly Labrusca and Vinifera characters and some maintain that there are indications of Aestivalis as well. As to the proportion of these three species, if all be present, no one would care to hazard a guess.

The general appearance of Goff is well shown in the accompanying color-plate though the cylindrical shape and enlarged lower end of the bunch are more pronounced than in typical specimens. Because of the peculiar shape of both bunch and berry the fruit cannot be called handsome though the color is sufficiently attractive. The quality of Goff is of the highest, being hardly surpassed by any of the commonly grown grapes of this country. The flavor is sweet, rich and vinous and the pulp, while firm, is tender and readily parts from the seeds. In general the flavor is that of a Labrusca-Vinifera hybrid though there is a spiciness in it that suggests an admixture of Aestivalis; the flesh characters are better than those of the average hybrid of the two first named species, being less pulpy and coarse. Probably the most valuable character of Goff is the long keeping quality of the fruit in which respect it far surpasses the several commercial varieties of this State and equals the best keeping American grapes known. In a test during the winter of 1907–08 of the keeping qualities of 255 varieties of grapes from the Station vineyards, kept in eight-pound baskets in com-

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mon storage, unwrapped, Goff was one of the four best keepers, Canandaigua, Wilder and Vergennes being the other three. These four varieties kept in very good condition until April 16, and under circumstances not altogether favorable.

The vine characters of Goff are exceptionally good on the Station grounds. The vines are vigorous, hardy, very productive, and the foliage is healthy. All of the above characters are developed to an extent seldom found in a variety showing the specific blood indicated in the Goff. In these respects, taking all of them, this variety surpasses any of Rogers' hybrids, grapes with which it can be best compared. The variety is now distributed for testing in the various grape regions of the State and if the reports of its behavior are satisfactory, it will be generally distributed within a few years.

Vine vigorous to very vigorous, hardy, very productive. Canes medium to long, numerous, often rather thick, dark brown with slight reddish tinge; nodes enlarged, flattened; internodes intermediate in length; diaphragm thick to medium; pith of average size; shoots pubescent; tendrils continuous, sometimes intermittent, long, bifid to trifid.

Leaf-buds intermediate in size and thickness, short to medium, plump, conical to roundly obtuse, open in mid-season. Young leaves tinged on lower side and along margin of upper side with light rose-carmine. Leaves healthy, medium to large, of average thickness; upper surface light green; smooth to rugose, dull; lower surface pale green, slightly cobwebby; veins fairly distinct; lobes three to five in number with terminal lobe obtuse to acute; petiolar sinus deep, narrow; basal sinus medium to shallow, rather wide; lateral sinus deep, wide; teeth shallow, of average width. Flowers fertile, open in mid-season or later, sometimes on plan of six; stamens upright.

Fruit ripens a little later than Concord, keeps unusually well. Clusters variable in size, long to medium, frequently very slender, cylindrical, surface of cluster often irregular with blunt end larger than the part above, usually not shouldered, or with a small single shoulder, compact; peduncle usually short, intermediate in thickness; pedicel rather short, of average thickness, covered with few, if any warts, wide at point of attachment to fruit; brush short, slender, pale green with faint brown tinge. Berries variable in size, averaging about the size of Concord, frequently misshapen, strongly flattened, not uniform, dark reddish-purple, covered with heavy lilac or bluish bloom, persistent, firm. Skin thick, intermediate in toughness, adheres slightly to the pulp, with bright red pigment, slightly astringent. Flesh pale green, translucent, juicy, tender, a little coarse, somewhat vinous, sweet from skin to center, very good in quality. Seeds separate easily from the pulp, one to five, average three, intermediate in size, variable in breadth,

of medium length, rather sharp-pointed, light brownish; raphe obscure; chalaza of fair size, above center, distinct.

GOLD COIN.

(Aestivalis, Labrusca.)

1. *Kan. Sta. Bul.*, 28:162. 1891. 2. *Ill. Sta. Bul.*, 28:264. 1893. 3. *Bush. Cat.*, 1894:128. 4. Husmann, 1895:129. 5. *Kan. Sta. Bul.*, 73:183. 1897. 6. *Am. Pom. Soc. Cat.*, 1899:28. 7. *Tex. Sta. Bul.*, 56:267, 277. 1900. 8. *Rural N. Y.*, 61:722. 1902.

Gold Coin is at the head of Munson's "Gold Coin Family"[1] having been produced by crossing Norton and Martha. Unfortunately the variety is only of general interest in New York as it does not succeed so far north, the summer seasons being too short. Where it succeeds it is a handsome market variety of very good quality and makes an excellent white wine. The vines are productive and are reported to be unusually free from attacks of fungal diseases.

As indicated in the preceding paragraph, this variety was originated by T. V. Munson of Denison, Texas. It sprung from seed of Cynthiana or Norton[2] pollinated by Martha which was planted in 1883 and was introduced by the originator in 1894. Gold Coin was placed on the grape list of the American Pomological Society fruit catalog in 1899.

Vine medium to vigorous, hardy, produces heavy crops. Canes intermediate in length and number, rather slender; tendrils continuous and sometimes intermittent, trifid to bifid. Leaves medium to above in size, moderately light green, slightly rugose; lower surface pale green, tinged with bronze, heavily pubescent. Flowers nearly fertile; stamens upright. Fruit ripens after mid-season, keeps long in good condition. Clusters medium to small, not very long, usually single-shouldered, variable in compactness. Berries large to below medium, roundish to slightly oval, yellowish-green with a distinct trace of reddish-amber, covered with a medium amount of gray bloom, usually persistent. Skin covered with small scattering brown dots, thin, inclined to toughness. Flesh somewhat tough, faintly aromatic, tart from skin to center, good in quality. Seeds separate easily from the pulp, somewhat numerous, above medium to medium in size, not notched; raphe shows as a distinct cord.

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[1] *Tex. Sta. Bul.*, 56:267. 1900.

[2] Munson regards them as identical.

GOLDEN DROP.

(Labrusca, Vinifera, Bourquiniana.)

1. *Montreal Hort. Soc. Rpt.*, 1880:112. 2. *Bush. Cat.*, 1883:102. *fig.* 3. Barry, 1883:447. 4. *W. N. Y. Hort. Soc. Rpt.*, 28:17. 1883. 5. *Ga. Sta. Bul.*, 53:44, 51. 1901.

Golden Drop is an early white grape now nearly lost to cultivation but once somewhat popular because of its high quality. Its hardiness and earliness might make it a valuable grape for northern latitudes where more commonly cultivated varieties do not mature with certainty. It is somewhat susceptible to fungal diseases, mildew especially, and needs more than ordinary care.

This variety was originated by C. G. Pringle of Charlotte, Vermont, from seed of Adirondac fertilized with Delaware, planted in 1869 and introduced by B. K. Bliss of New York, about 1880. It has never been popular but is still sold by an occasional nurseryman.

Vine vigorous to weak, not productive, inclined to mildew. Canes long to medium, numerous, dark brown; tendrils continuous to intermittent, bifid. Leaves intermediate in size, light green; lower surface pale green, very slightly pubescent. Flowers sterile or nearly so, open in mid-season; stamens upright. Fruit ripens shortly before Niagara, keeps well. Clusters small, of medium length, slender, rather cylindrical, loose. Berries medium to small, roundish to slightly oval, light green with dull yellowish-red tinge in the sun, covered with thin gray bloom, persistent. Flesh tender and soft, not foxy, sweet, very mild, good in quality. Seeds medium to small, short.

GREEN EARLY.

(Labrusca, Vinifera?)

1. *Ill. Hort. Soc. Rpt.*, 1902:223. 2. *Ib.*, 1905:296.

Green Early is a white grape coming in season with Winchell which surpasses it in most characters, quality in particular. This variety is not to be confused with "Chas. A. Green," also a white grape, which was originated by F. W. Loudon of Janesville, Wisconsin, and was introduced by Chas. A. Green of Rochester. We have not been able to get a complete description of the latter variety.

Green Early was found growing by the side of a ditch near a Concord vineyard, on land belonging to O. J. Greene of Portland, Chautauqua County, New York. The vine was transplanted into a nursery in 1887.

The parentage of the variety is unknown but it is credited to Concord owing to its resemblance to that variety. It was introduced in the late nineties by J. H. Greene of Portland, New York, and H. W. Blowers of Westfield, New York.

Vine medium to very vigorous, usually hardy, productive. Canes variable in length and thickness, dark-reddish brown; tendrils continuous, sometimes intermittent, bifid to trifid. Leaves variable in size, medium green; lower surface pale green, pubescent; stamens upright. Fruit ripens about with Moore Early or with Concord in some locations, does not keep long and is only a fair shipper. Clusters variable in size, length and breadth, sometimes single-shouldered, variable in compactness. Berries above medium to nearly small, oval to slightly roundish, light green tinged with yellow, covered with thin gray bloom, moderately persistent, rather soft. Skin nearly thin, tender, inclined to crack. Flesh slightly tough and aromatic, almost sweet at skin to acid at center, fair flavor and quality. Seeds medium to below in size, intermediate in length and breadth, sharp-pointed.

GREIN GOLDEN.

(Riparia, Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1881:33. 2. *Ill. Hort. Soc. Rpt.*, 1881:162, 164. 3. *Bush. Cat.*, 1883:103. 4. *Kan. Hort. Soc. Rpt.*, 1889–90:20. app. 5. *Gar. and For.*, 3:290, 490, 599. 1890. 6. *Ala. Sta. Bul.*, 10:10. 1890. 7. *Ill. Sta. Bul.*, 28:264. 1893. 8. *N. Y. Sta. An. Rpt.*, 15:294. 1896. 9. *Ib.*, 17:531, 548, 555. 1898.

Grein's No. 2 (3).

Grein Golden ranks with Missouri Riesling as the best of Nicholas Grein's several seedlings of Taylor, both being improvements over the parent variety. It is very similar to Missouri Riesling but is, on the Station grounds, and in general, a much stronger grower. For a variety of the Taylor group, both cluster and berry are large and uniform, which, with the attractive golden color of the berries, make it a most handsome fruit. But as the variety grows in New York the flavor is not at all pleasing, being an unusual commingling of sweetness and acidity quite disagreeable to most palates; and so while its habit of growth, hardiness, health of vine and productiveness are such as would make the variety acceptable the quality of the fruit condemns it for table use. In fact the last remark applies in a greater or less degree to all of the varieties of the Taylor group for this State — they fall so far short in quality that they can never be of value as market or table grapes. All are suitable for wine and Grein Golden in particular is said to make a very good white wine. The fruit of this variety

GREIN GOLDEN

cracks badly in wet weather and does not keep nor ship well, skin and flesh being very tender.

Nicholas Grein of Hermann, Missouri, produced Grein Golden over thirty years ago. It is generally supposed to be from seed of Taylor. Grein states that he planted seed of the European Riesling and of Taylor at the same time, and that the Taylor did not germinate but that the European Riesling did, one of the seedlings being Grein Golden. As the Grein Golden shows Riparia very plainly, with no trace of Vinifera, it is generally supposed that the seeds were mixed and that Grein Golden is a Taylor seedling. The variety has been and still is a commercial sort in the wine districts of the middle West.

Vine vigorous, hardy, productive. Canes long to medium, numerous, somewhat slender, rather dark reddish-brown: nodes slightly enlarged, usually flattened; internodes long to medium; diaphragm of average thickness; pith intermediate in size; shoots pubescent; tendrils intermittent, of fair length, trifid to sometimes bifid.

Leaf-buds of average size, short to medium, intermediate in thickness, conical to pointed, open in mid-season. Young leaves faintly tinged on lower side only with faintest rose carmine. Leaves large to medium, thick; upper surface dark green, dull, moderately smooth; lower surface pale green, slightly pubescent; veins not conspicuous; lobes none to three with terminus acute; petiolar sinus deep, medium to narrow; basal sinus usually lacking; lateral sinus shallow, wide, frequently obscure; teeth medium to deep, of average width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit ripens about with Niagara, does not keep nor ship well. Clusters large, long to medium, somewhat broad, tapering, irregular, often heavily single-shouldered, loose to moderately compact; peduncle above average length, thickish; pedicel intermediate in length and thickness, covered with few, inconspicuous warts; brush slender, medium in length, pale green. Berries uniform in size, rather large, roundish, attractive light green often with tinge of golden yellow or pinkish-yellow, glossy, covered with thin gray bloom, persistent, intermediate in firmness. Skin very thin, tender, often inclined to crack, does not adhere to the pulp, contains no pigment. Flesh greenish, translucent, very juicy, tender, vinous, slightly sweet next the skin but decidedly acid at center, medium to good in quality, better than Elvira. Seeds separate easily from the pulp when mature, two to four in number, average two and three, above medium in size, broad, intermediate in length, plump, light to dark brown; raphe shows as a small but prominent cord; chalaza rather large, at center or slightly above, oval, usually distinct.

HARTFORD.

(Labrusca, Vinifera?)

1. *Mag. Hort.*, 18:114. 1852. 2. *Am. Pom. Soc. Rpt.*, 1856:36, 165. 3. *Mag. Hort.*, 24:131. 1858. 4. *Horticulturist*, 13:122, 166. 1858. 5. *Am. Pom. Soc. Cat.*, 1862:90. 6. *Am. Pom. Soc. Rpt.*, 1862:136, 140. 7. *Ib.*, 1881:117, 119, 123, 136, 138, 153, 154, 158, 162, 168. 8. *Bush. Cat.*, 1883:103. 9. *N. Y. Sta. An. Rpt.*, 9:327. 1890. 10. *Va. Sta. Bul.*, 94:135. 1898. 11. *N. Y. Sta. An. Rpt.*, 17:531, 541, 544, 548, 552, 555. 1898. 12. *Mo. Sta. Bul.*, 46:39, 42, 44, 46. 1899.

Hartford Prolific (1, 2, 3, 4, 5, 6, 8). *Steele's Seedling* (4).

For many years Hartford was looked upon as one of the standard early black grapes, if not the standard. It is now being very largely superseded, and greatly to the betterment of viticulture, by other grapes of its season of better quality, though it is still quite commonly grown in New York at least. It is probable that for many years there will be locations in which Hartford may be profitably cultivated (some in which it alone will be worth growing), and purposes for which it may be recommended. The many good characters of the vine make it a desirable grape for breeding work.

The vine of Hartford can be well characterized by its good qualities but the fruit is best described through its faults. The plants are vigorous, prolific, healthy, and the fruit is borne early in the season, ripening from a week to two weeks in advance of the Concord. After Concord the Hartford is one of the most fruitful of American grapes. The canes are remarkable for their stoutness and for the crooks at the joints. The bunches are not unattractive (the color-plate fails to do them justice as to size and color), but the quality of the fruit is low, even for an early grape where the highest quality is hardly expected. The flesh is pulpy and unpleasant to eat while the flavor is both too insipid and too foxy to be good. Because of its poor quality, now that there are so many really good early grapes, Hartford should be discarded. But there is another reason for ceasing its culture. The berries shell badly either on the vine or when packed for shipping, so that the fruit neither ships, packs, nor keeps well. The competition of the southern states from which later and better varieties can be shipped to northern cities to compete with Hartford is still another reason for the passing of this variety from commercial cultivation. Still other faults are that it colors a long while before it is ripe; and it is

HARTFORD

only partly self-fertile so that in seasons when there is bad weather during blooming time the clusters are usually loose and straggling.

The original vine of Hartford was a chance seedling in the garden of Paphro Steele of West Hartford, Connecticut. It fruited for the first time in 1849. This seedling was supposed by those familiar with the surroundings at the time to be a cross of Isabella and the wild fox grape. It was named Hartford Prolific by the Hartford County Horticultural Society. The American Pomological Society placed it in their fruit catalog in 1862 and it has never been removed. The word "Prolific" appears to have been dropped from this name by common consent about 1890.

Vine medium to vigorous, injured in severe winters, very productive as an early grape. Does not require as close pruning as many other varieties. Canes above medium in length, intermediate in number, not thick, dark brown, covered with considerable pubescence; nodes enlarged, flattened; internodes medium to short; diaphragm medium to below in thickness; pith of average size; shoots very pubescent; tendrils continuous, long, bifid.

Leaf-buds of average size, short, thick to medium, obtuse to conical. Leaves nearly large, thick; upper surface dark green, dull, rugose; lower surface pale green, often with trace of bronze, thinly pubescent; veins indistinct; lobes variable with terminus blunt to acute; petiolar sinus medium to deep, narrow; basal sinus usually lacking; lateral sinus shallow, narrow, often a mere notch; teeth shallow, of average width. Flowers fertile, open in mid-season; stamens upright.

Fruit ripens early, does not keep well. Clusters above average size, nearly long, slender except when shouldered, slightly tapering, irregular, often with a long, large, single shoulder, loose; peduncle long to medium, of fair size; pedicel short, intermediate in thickness, covered with few small warts; brush greenish with dull tinge of reddish-brown. Berries regular in size averaging above medium, roundish to oval, black, not glossy, covered with blue bloom, drop badly from pedicel, of average firmness. Skin thick, tough, adheres considerably to the pulp, contains much purplish-red pigment, somewhat astringent. Flesh greenish, translucent, juicy, toughish, stringy and foxy, rather sweet at skin but somewhat tart at center, resembles Concord but ranks below that variety in flavor and quality. Seeds separate rather easily, one to four, average three or four, intermediate in size, almost broad, of fair length, dark brown; raphe obscure; chalaza intermediate in size, at center or slightly above, irregularly circular, rather distinct. Must 71°.

HAYES.

(Labrusca, Vinifera?)

1. *Gar. Mon.*, 21:340. 1880. 2. *Bush. Cat.*, 1883:106. *fig.* 3. *Mass. Hort. Soc. Rpt.*, Pt. 1, 1884:22, 23. 4. *Ohio Hort. Soc. Rpt.*, 1885–6:169. 5. *Am. Pom. Soc. Cat.*, 1889:24. 6. *N. Y. Sta. An. Rpt.*, 9:331. 1890. 7. *Rural N. Y.*, 53:616, 645. 1894. 8. *N. Y. Sta. An. Rpt.*, 17:531, 541, 548, 552. 1898.

F. B. Hayes (7). Francis B. Hayes (3, 4). *Francis B. Hayes* (2, 6). *Moore's No. 31* (2).

In 1880 the Massachusetts Horticultural Society awarded a first class certificate of merit to Hayes and it was very favorably spoken of by many expert grape-growers in New England and the East. These recommendations brought it prominently before grape-growers and for a time it was a somewhat popular variety, but as it became better known several defects became apparent and its popularity waned. The vine is hardy and vigorous but the growth is slow and in New York at least the variety is a shy or precarious bearer and both bunches and berries are too small and variable to make it an attractive grape. Besides it comes at a time, a week or ten days earlier than Concord, when there are many other really good green grapes. Excellent though it is in quality, it is hardly worth giving a place in this State for any purpose. The foliage is tender to the heat of summer and the variety is not therefore adapted to southern or western localities.

John B. Moore of Concord, Massachusetts, is the originator of Hayes. It is said to be a seedling of Concord and one of the same lot of seedlings as Moore Early. It was first fruited in 1872 and was exhibited at Boston two years later. The variety was not introduced, however, until the fall of 1884. It is a somewhat remarkable seedling of Concord for it shows no foxiness of flavor and has tender, delicate flesh, which taken together make it of high quality. Hayes illustrates well the fact mentioned under Concord that the light colored seedlings of that variety are usually of high quality. The intermittent tendrils and certain characters of the seeds indicate that there is some species present besides Labrusca, probably Vinifera.

Vine variable in vigor and productiveness, usually hardy and healthy. Canes intermediate in length, numerous, rather slender; tendrils intermittent, bifid to trifid. Leaves not uniform in size, nearly dark green; lower surface considerably pubescent. Flowers almost sterile, open medium late; stamens upright. Fruit ripens from a week

to ten days earlier than Concord, keeps well. Clusters variable in size and length, often single-shouldered, not uniform in compactness. Berries above medium to small, roundish, greenish-yellow to slightly golden yellow, covered with thin gray bloom, persistent. Skin thin, tender, covered with few small reddish-brown dots. Flesh fine-grained, tender, vinous, sweet at skin to agreeably tart at center, rather mild, good in quality. Seeds few, of average size, medium to short, often plump.

HEADLIGHT.

(Vinifera, Labrusca, Bourquiniana.)

1. *Rural N. Y.*, 60:637. 1901. 2. *Am. Pom. Soc. Rpt.*, 1903:82. 3. *U. S. D. A. Yr. Bk.*, 1903:276. *col. pl.* 4. *Mo. Hort. Soc. Rpt.*, 1904:301, 306.

Headlight is one of the most promising of Munson's many valuable grapes. Possibly it is more valuable for southern vineyards than for northern ones, yet it is worthy of trial in the North. Its meritorious characters are: Productiveness, outyielding Delaware with which it would compete in New York; disease-resistant foliage and vines little affected by mildew and rarely attacked by black-rot even in the South; more than average vigor of vine, though it has fallen short of expectations in this respect in the Station vineyard; high quality of the fruit, being almost the equal of Delaware in flavor and having tender melting pulp which readily parts from the seeds; and earliness, ripening before Delaware and hanging on the vines or keeping after being picked for some time without deterioration in either quality or appearance. Though a southern grape it has proved perfectly hardy here and were it not that it must compete in the North with many other good grapes, Delaware in particular, it might take high place in northern viticulture. Even with such competition it is well worth a trial in either the amateur or commercial vineyards of New York. It would seem that for the South its resistance to disease should make it a valuable commercial variety.

The originator of Headlight, T. V. Munson, states in a personal letter that it came from Moyer seed fertilized by Brilliant. The seed from which the variety came was planted in 1895 and the new grape was introduced in 1901 by the producer. While Headlight is as yet comparatively little known, it is being tested in many of the grape regions of the country and its value should soon be known. Such reports of its behavior as have been made are in the main very favorable.

Vine at this Station medium to weak, hardy, very productive. Canes short to medium, few in number, slender, dark brown to reddish-brown with small amount of bloom at nodes, which are enlarged and usually not flattened; internodes short; diaphragm thick; pith below medium to nearly small; shoots more or less pubescent; tendrils continuous, short, bifid, very persistent.

Leaf-buds small and short, inclined to slender, pointed to conical, open late. Young leaves heavily tinged on under side and lightly on the upper side with bright carmine. Leaves medium to small, thick; upper surface light green, dull, smoothish; lower surface pale green, with some pubescence; veins obscure; lobes none to three with terminus obtuse to acute; petiolar sinus intermediate in depth and width; basal sinus usually lacking; lateral sinus shallow, narrow; teeth shallow, of average width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit ripens before Delaware, keeps well. Clusters small, short, of average breadth, tapering, frequently single-shouldered, compact; peduncle short to medium, slender; pedicel short, slender, covered with a few small, inconspicuous warts; brush yellowish-brown. Berries medium to very small, roundish, dark red to almost purplish-black, not glossy, covered lightly with blue bloom, persistent, very firm. Skin of average thickness, tough, adheres slightly to the pulp, contains more or less light red pigment, astringent. Flesh greenish, translucent, very juicy, tender, fine-grained, vinous, sweet from skin to center, good to very good in quality. Seeds separate easily from the pulp, one to three, average two, below medium in size, intermediate in length, light brown; raphe obscure; chalaza above center, circular, distinct.

HERBEMONT.

(Bourquiniana.)

1. *Amer. Farmer*, 6:369. 1825. 2. *Ib.*, 10:211, 324. 1828. 3. Prince, **1830**:154 4. Ib., **1830**:154, 339. 5. *Mag. Hort.*, 9:373. 1843. 6. *U. S. Pat. Off. Rpt.*, **1845**:937, 940. 7. Downing, **1845**:258 8. *Horticulturist*, 1:98. 1846. 9. *U. S. Pat. Off. Rpt.*, **1847**:464, 465, 469. 10. *Horticulturist*, 12:459. 1857. 11. Downing, **1857**:339. 12. *Horticulturist*, 20:40. 1865. 13. *Am. Pom. Soc. Cat.*, **1867**:44. 14. *Grape Cult.*, 1:17, 59, 69, 98, 173, 179, 257, *fig.*, 258, 260, 296, 302. 1869. 15. *Ib.*, 2:76, 181, 195, 266. 1870. 16. *Am. Pom. Soc. Rpt.*, **1881**:39. 17. *Bush. Cat.*, **1883**:104, 105. *fig.* 18. Husmann, **1895**:183. 19 *Tenn. Sta. Bul.*, Vol. 9:181, *fig.*, 182, 195. 1896. 20. *Tex. Farm and Ranch*, Feb. 8, **1896**:11. 21. *Tex. Sta. Bul.*, 48:1150, 1157, 1898. 22. *Mo. Sta. Bul.*, 46:39, 43, 45, 46, 50. 1899. 23. *Traité gen. de vit.*, 6:256. 1903.

Bottsi (20, ?23). *Brown French* (20, 23). *Dunn* (20). HERBEMONT MADEIRA (4, 5, 6). *Herbemont's Madeira* (10, 11, 14, 17, 19, 20, 23). *Hunt* (1). *Kay's Seedling* (20). *McKee* (20, 23). *Neal grape* (11, 23). *Neil grape* (17, 19, 23). WARREN (2, 7, 10). *Warren* (2, 4, 6, 11, 14, 17, 19, 20, 23). *Warrenden* (6). WARRENTON (1, 2, 3, 5). *Warrenton* (4, 10, 11, 14, 17, 19, 20, 23). *White Herbemont* (20).

In the South Herbemont has the same relative rank among cultivated grapes that the Concord holds in the North. The variety is injured

HEADLIGHT

by cold below zero or thereabouts and cannot be grown north of the Ohio River and fails somewhat in Missouri and Arkansas because of its tenderness. It requires, too, a long season for perfect maturity. Herbemont is also fastidious as to soil and its cultivation is somewhat limited by this factor. It requires a well-drained warm soil and one which is abundantly supplied with humus; though the variety often thrives on the comparatively poor hill-land of the South. Despite these limitations, this variety is grown in an immense territory, extending from Virginia and Tennessee to the Gulf and westward through Texas. The synonyms given above are many of them allusions to the localities in which it has been grown, while most of the others pertain to its origin, but all show to some extent the wide dissemination of this grape and indicate in a measure its merit.

Herbemont is known and widely grown in Europe as well as in the southern United States. In southwestern France where the demands of the variety seem to be particularly well fulfilled, it is firmly established and is highly regarded as a direct producer. In northern and central France, however, the winters are too cold and the seasons too short for its profitable culture. Its use as a stock in France is limited for it has been found to be but medium in its resistance to phylloxera; does not grow well from cuttings and is therefore propagated with difficulty; the wood does not bear grafts well and is worked with difficulty in either field or bench grafting; and lastly the French find it very subject to chlorosis, especially in calcareous soils.

The vine is, according to all accounts, a remarkably vigorous, rapid and healthy grower, being hardly surpassed in these characters by any of our native grapes. The wood is strong, abundant and very hard, the latter a serious difficulty in grafting. The fruits are attractive because of the size of the bunch and the glossy black of the berries, which are small as compared with northern grapes. Fruit is borne abundantly and with certainty year in and year out in suitable localities. The flesh characters of the fruit are good for a small grape, neither flesh, skin nor seeds being especially objectionable in eating; the pulp is tender and juicy; rich, sweet and highly flavored, the combination of flesh and flavor characters giving a grape of high quality. Herbemont is greatly esteemed as a table grape and is said

to make a very good light red wine. The ample, lustrous green foliage makes the variety one of the attractive ornamental plants of the South.

Herbemont has been much used in grape-breeding and to advantage, for probably no other species offers as many desirable characters for the South and Southwest as the one to which this variety belongs and best represents. There are now several pure-bred seedlings of Herbemont under cultivation and a greater number in which it is one of the parents. Of the former Black Herbemont and the Onderdonk are good representatives and Jaeger, Delicious, Muench, Vinita, Perry, Mrs. Munson and Neva Munson, all from Munson of Texas, are Herbemont cross-breeds.

The history of Herbemont, as it must be written from such information as can now be obtained, is scarcely more than a collection of mythical stories The variety is known to have been in cultivation in Georgia before the Revolutionary War, when it was generally known under the name of Warrenton or Warren. In the early part of the last century it came to the hands of Nicholas Herbemont of Columbia, South Carolina, who gave it the name Madeira under a temporary supposition that it came from the island of that name. This name was generally changed to Herbemont's Madeira. Herbemont made the variety known to the public, sending it to William R. Prince of Flushing, Long Island, and Nicholas Longworth of Cincinnati, the two most prominent viticulturists of that time who, in turn, aided in its distribution.

There have been many contradictory accounts of the origin of the grape, crediting it to Georgia, the Carolinas, or Europe. None is supported by sufficient evidence to make it creditable and most of them arose at so late a date that it was impossible for the writers to know anything about the facts of the case except by hearsay evidence. The early idea of many that it is a Vinifera was soon dropped. Later this variety and others of its class were known as southern Aestivalis; however, it was admitted that they were unlike other southern Aestivalis. Munson gave these grapes the name Bourquiniana, a name that has been accepted as a convenient designation for the group by some who do not accept his account of its origin. The Herbemont and Lenoir are the two varieties commonly referred to as typical of this so-called species.

The history of the culture of Herbemont in the North has been the

same everywhere. It was early introduced around Cincinnati, Ohio, and Hermann, Missouri, and for a time the growers had high hopes of its value. It winter-killed slightly but they overcame this by covering the vines; then the variety showed itself susceptible to rot and its culture was soon dropped. In 1867 the Herbemont was placed on the grape list of the American Pomological Society fruit catalog and it has never been removed.

We have no vines of Herbemont growing in the Station vineyard and the following description has been collected from a variety of sources.

Vine vigorous to very vigorous. Canes rather long and strong, bright green, with more or less purple, with considerable bluish-white bloom; internodes short; tendrils intermittent, of medium size, bifid or trifid. Leaves large, roundish, sometimes entire, or three- to seven-lobed, nearly glabrous above and below; upper surface clear green; lower surface lighter green, slightly glaucous; veins prominent and covered with rather abundant hair. Flowers self-fertile. Fruit ripens very late. Clusters large, long, tapering to cylindrical, prominently shouldered, compact; peduncle long and strong; pedicels somewhat short with few rather large warts; brush pinkish. Berries round, below medium in size, uniform, reddish-black or brown with abundant blue bloom. Skin thin, rather tough, with considerable pigment below. Flesh tender, very juicy; juice colorless or slightly pink; rather sweet, sprightly to slightly acid. Seeds two to four, usually two, small, reddish-brown, slightly glossy; chalaza round, prominent; raphe distinct.

HERBERT.

(Labrusca, Vinifera.)

1. *Mag. Hort.*, **31**:106. 1865. 2. *Horticulturist*, **24**:126. 1869. 3. *Grape Cult.*, **1**:180, 182. 1869. 4. *Am. Pom. Soc. Cat.*, **1869**:42. 5. *Am. Pom. Soc. Rpt.*, **1881**:32, 43, 121, 123, 136. 6. *Bush. Cat.*, **1883**:109. 7. *N. Y. Sta. An. Rpt.*, **11**:625. 1892. 8. *Ill. Sta. Bul.*, **28**:260. 1893. 9. *N. Y. Sta. An. Rpt.*, **17**:531, 548, 549, 555. 1898.

Rogers' No. 44 (1). *Rogers' No. 44* (2, 3, 4, 5, 6, 7).

Although Rogers' hybrids have not made a great impression upon the commercial grape culture of the country, all will agree that they are hardly surpassed for the home vineyard and, among them, at least none of the black varieties is superior for this purpose to Herbert. Barry equals it and possibly surpasses it to the taste of most grape connoisseurs in delicacy of flavor but Herbert is the handsomer fruit, is a little earlier and if anything its vine characters are somewhat better. When at its best, Herbert, and Barry too, nearly equal Black Hamburg in the characters that constitute high quality. They lack the richness of the Old World variety but they

are more sprightly and refreshing and do not cloy the appetite as does the Vinifera variety. In all that constitutes a fine table grape Herbert is about as near perfection as we have yet reached in the evolution of American grapes. As is the case with most black grapes the fruit colors long before it is ripe and when thus picked there is an astringency in its taste that wholly disappears when the fruit is fully ripe. For a Vinifera-Labrusca hybrid the Herbert is vigorous, hardy and fruitful ranking in these respects above many pure-bred Labruscas. While the fruit ripens with Concord it keeps long after and is a very good winter grape. It keeps, packs and ships well. It is unable to fertilize itself and must be set near other varieties. Herbert is well deserving attention from commercial growers who supply a discriminating market and its many good qualities will give it a high place in the esteem of grape connoisseurs.

For an account of the origin and early history of Herbert the reader is referred to "Rogers' Hybrids." The Herbert is first mentioned separately from the rest of Rogers' seedlings in 1865, under the designation *Rogers' No. 44.* In 1869 Rogers gave names to several of his seedlings and the *Rogers' No. 44* received the name Herbert. The same year it was placed on the grape list of the American Pomological Society fruit catalog. It has never been cultivated extensively but has always been a favorite with amateur growers. The differences in the descriptions furnished by different growers leads one to suspect that there are two or more varieties passing under this name.

Vine medium to very vigorous, injured in severe winters, productive. Canes very long, numerous, unusually thick, dark brown; nodes enlarged, somewhat flattened; internodes long to medium; diaphragm thick; pith medium to large; shoots pubescent; tendrils intermittent, long, bifid to trifid.

Leaf-buds above medium in size, shortish, plump, obtuse, open early. Young leaves strongly tinged on under side and along margin of upper side with bright carmine. Leaves very large to medium, roundish, of average thickness; upper surface dark green, dull, smooth; lower surface pale green with some pubescence; veins numerous and quite prominent; leaf not lobed, with terminus obtuse; petiolar sinus very deep, narrow, closed and overlapping; basal and lateral sinuses lacking; teeth shallow to medium. Flowers sterile, open in mid-season; stamens reflexed.

Fruit comes in season with Concord, keeps unusually well. Clusters medium to large, variable in length, rather broad, slightly tapering, two or three clusters per shoot, often heavily single-shouldered, loose to medium; peduncle of average length, thick;

HERBERT

pedicel intermediate in length, thick, covered with small russet warts; brush yellowish-green. Berries irregular in size but usually above medium, roundish to slightly flattened, rather dull black, covered with thick blue bloom, persistent, moderately firm. Skin variable in thickness and toughness, adheres somewhat to the pulp, contains a small amount of wine-colored pigment, astringent. Flesh light green, translucent, juicy, tender, fine-grained, with a little foxiness or muskiness, nearly sweet at skin but quite acid at center, quality good to very good. Seeds separate from the pulp with difficulty, three to six in number, average three, large, broadish, notched, quite long, with swollen neck, blunt, light brown with yellowish tips; raphe obscure; chalaza intermediate in size, decidedly above center, circular to pear-shaped, distinct.

HERCULES.

(Labrusca, Vinifera.)

1. *N. Y. Sta. An. Rpt.*, 11:625. 1892. 2. *Ill. Hort. Soc. Rpt.*, 1893:89. 3. *N. Y. Sta. An. Rpt.*, 12:620. 1893. 4. *Bush. Cat.*, 1894:135. 5. *N. Y. Sta. An. Rpt.*, 17:531, 548, 555. 1898.

Hercules is characterized by its extremely large berries, the size being as great, if not greater, than that of any of our native grapes, and approaching that of the largest Old World grapes. The fruit is handsomely colored and the cluster, when at its best, is large and well-formed with a striking resemblance to Black Hamburg. The flavor, while not of the best, is good. But large size, handsome appearance, and good flavor cannot make up for the several defects of the variety. The fruit drops and cracks badly and the pulp is too tough and adheres too firmly to the seed for a dessert grape. These faults are so marked as to make Hercules almost worthless except for breeding purposes. Added to the desirable characters of the fruit given above, the vines are hardy, vigorous and productive so that this variety offers an unusual array of valuable qualities for the grape-breeder.

At one time it was claimed that Hercules was a seedling of a California grape but later it was said to have come from seed of one of Rogers' hybrids. This opinion was based solely upon the characters of the plant, as the originator, the late G. A. Ensenberger of Bloomington, Illinois, gave no satisfactory account of the parentage of the grape. Hercules was exhibited at the Columbian Exposition at Chicago, where, on account of its large size and showy appearance, it attracted much attention. It is unfortunate that the parentage of this grape is not known as it is likely to be used not a little in the grape-breeding of the future in producing large-fruited varieties.

Vine vigorous to very vigorous, hardy except in extreme winters, very productive. Canes long to medium, intermediate in number and thickness, brown or dark reddish-brown; nodes slightly enlarged, flattened; internodes medium to long; diaphragm thick; pith large to medium; shoots slightly pubescent; tendrils continuous, of average length, bifid.

Leaf-buds medium in size, short, thickish, pointed to conical, open in mid-season. Young leaves lightly tinged on lower side and along margin of upper side with rose carmine. Leaves large, intermediate in thickness; upper surface light green, slightly glossy, smoothish; lower surface grayish-green, pubescent; veins distinct; lobes none to three, with terminus acute; petiolar sinus deep to medium, intermediate to narrow; basal sinus usually absent; lateral sinus shallow to a mere notch; teeth medium to shallow, intermediate in width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit comes in season about with Concord, somewhat subject to rot, keeps fairly well. Clusters attractive, somewhat resembling Black Hamburg, very large to medium, of average length, broad to medium, slightly tapering to nearly cylindrical below the single shoulder, one to three clusters per shoot, medium to rather compact; peduncle short and thick; pedicel inclined to shortness, thickish, much enlarged at point of attachment to the fruit; brush of average length, pale green. Berries unusually large but somewhat variable, roundish, black, glossy, covered with more or less blue bloom, not persistent, firm. Skin cracks badly in some seasons, intermediate in thickness and toughness, adheres slightly to the pulp, contains some wine-colored pigment, astringent. Flesh decided green, slightly translucent, juicy, very tough, coarse, stringy, somewhat foxy, sweet near skin but acid at center, fair to good in quality. Seeds very adherent to the pulp, one to five in number, average three, large to medium, above usual length, broad to medium, deeply notched, blunt, brownish; raphe buried in a broad, deep groove; chalaza small, plainly above center, circular to oval, distinct.

HERMANN.

(Aestivalis, Labrusca.)

1. *Ill. Hort. Soc. Rpt.*, 1868:168. 2. *Grape Cult.*, 1:17, 104, *fig.*, 105, 239, 260, 326, 330. 1869. 3. *Bush. Cat.*, 1883:107. *fig.* 4. *Mo. Hort. Soc. Rpt.*, 1883:41 5. *Ib.*, 1891:128. 6. Husmann, 1895: 174. 7. *Tex. Sta. Bul.*, 48:1150, 1157. 1898. 8. *Mo. Sta. Bul.*, 46:39, 43, 45. 1899. 9. *Kan. Sta. Bul.*, 110:246. 1902.

Hermann is a southern grape, a true Aestivalis in all characters, and is not adapted to the North. When the variety was introduced, fifty or more years ago, it was considered a valuable addition to the list of wine grapes but it has not grown in favor nor popularity nor been extensively planted in any of the grape regions of the South It is said to be vigorous, hardy and productive; to defy all attacks of phylloxera; and to make a very

HERCULES

superior wine. But the berries are very small, ripen very late, in some localities crack badly and in others rot.

The variety was originated by F. Langendoerfer of Hermann, Missouri, from seed of Norton planted in 1860. The first fruit was borne in 1863. At one time it was considerably planted in Missouri as a wine grape but it did not become popular nor spread from varietal vineyards to any extent on account of its lack of quality for either the table or wine. It is of interest chiefly as a seedling of Norton and for its very good vine characters. The following description has been taken from a number of sources, chiefly from the *Bushberg Catalogue:*

Vine vigorous, somewhat tender, resembling Norton in foliage except that the leaves are of a lighter color and somewhat more deeply lobed. Stamens erect. Clusters long and narrow, rather compact, rarely shouldered. Berries small, round, black with blue bloom; pulp tender, juicy, and of the characteristic spicy Aestivalis flavor. Must heavy and very fragrant, brownish-yellow making a wine the color of Brown Sherry or Madeira, of great body and fine flavor; registers 94°–105°.

HICKS.

(Labrusca.)

1. *Mo. Hort. Soc. Rpt.*, 1898:46. 2. *Am. Pom. Soc. Rpt.*, 1899:89. 3. *Ill. Hort. Soc. Rpt.*, 1904:228. 4. *Iowa Hort. Soc. Rpt.*, 1904.228. 240, 241. 5. *Mich. Sta. Sp. Bul.*, 30:11. 1905.

Hicks has proved itself a remarkably good grape in the vineyard of this Station, and were it not for the fact that the fruit is almost identical with that of Concord, ripening with it or but a little earlier, there certainly would be a place for it in the viticulture of the State. The fact that it was introduced some years ago and has not found great favor with growers is assumptive evidence that it cannot make headway against Concord with which it must compete. On the Station grounds it is more prolific than Concord and its vines are of stronger growth. The variety is well worthy a trial.

The origin of the Hicks is apparently unknown. It was introduced in 1898 by Henry Wallis of Wellston, Missouri, who states that it is a chance seedling sent from California about 1870 to Richard Berry, a well-known nurseryman of St. Louis County, Missouri. After Berry's death it passed into the hands of Wallis, who named it Hicks. It is supposed from its characters to be of Concord parentage.

Vine vigorous to very vigorous, hardy, very productive. Canes medium to long, numerous, of average thickness, moderately dark brown to reddish-brown, surface covered with thin blue bloom; tendrils continuous, bifid to trifid. Leaves large, medium to thick; upper surface dark green, slightly glossy, of average smoothness; lower surface whitish, changing to a rather heavy bronze, strongly pubescent; veins well defined. Flowers fertile or nearly so, open early; stamens upright.

Fruit ripens with Concord or slightly earlier, keeps fairly well. Clusters large to medium, long to medium, broad, tapering, often single-shouldered, medium in compactness. Berries large, roundish, dark purplish-black to black, covered with heavy blue bloom, inclined to shatter somewhat when overripe, firm. Skin intermediate in thickness, tender, contains a small amount of very dark wine-colored pigment. Flesh greenish, juicy, rather tough, fine-grained, faintly foxy, sweet at skin to acid at center, mild when fully ripe, good in quality. Seeds somewhat adherent, above medium in size, short, broad, blunt, brownish; raphe buried in a rather broad groove; chalaza of average size, slightly above center, oval to circular.

HIDALGO.

(Vinifera, Labrusca, Bourquiniana.)

1. *Rural N. Y.*, 60:637. 1901. 2. *Mo. Hort. Soc. Rpt.*, 1904:306.

Hidalgo is a comparatively recent addition to the list of grapes for table use. While it has not been tried generally, and is not widely known as yet, it is accorded a color-plate and a full description in this work chiefly because of its remarkably fine quality. It is rich and sweet, delicately flavored, yet sprightly, and with color, size and form of berry and bunch so well combined as to make it a singularly handsome fruit. The skin is thin but firm and the variety keeps well and ships well. The vine characters for this State are not well known. On the grounds of this Station it is doubtfully hardy, variable in vigor, and not always fruitful. While Hidalgo may not prove of value for the commercial vineyard, in favorable situations it may be expected to give a supply of choice fruit for the amateur.

The parentage of Hidalgo as given by its originator, T. V. Munson, is Delaware, Goethe and Lindley. The variety was introduced by the originator in 1902 and is now being tested in various parts of the country. The reports that come from those who have seen or grown Hidalgo agree in the main with the characterization given above and bespeak for it a high degree of popularity, at least as a table grape for the garden and possibly for the vineyard.

by cold below zero or thereabouts and cannot be grown north of the Ohio River and fails somewhat in Missouri and Arkansas because of its tenderness. It requires, too, a long season for perfect maturity. Herbemont is also fastidious as to soil and its cultivation is somewhat limited by this factor. It requires a well-drained warm soil and one which is abundantly supplied with humus; though the variety often thrives on the comparatively poor hill-land of the South. Despite these limitations, this variety is grown in an immense territory, extending from Virginia and Tennessee to the Gulf and westward through Texas. The synonyms given above are many of them allusions to the localities in which it has been grown, while most of the others pertain to its origin, but all show to some extent the wide dissemination of this grape and indicate in a measure its merit.

Herbemont is known and widely grown in Europe as well as in the southern United States. In southwestern France where the demands of the variety seem to be particularly well fulfilled, it is firmly established and is highly regarded as a direct producer. In northern and central France, however, the winters are too cold and the seasons too short for its profitable culture. Its use as a stock in France is limited for it has been found to be but medium in its resistance to phylloxera; does not grow well from cuttings and is therefore propagated with difficulty; the wood does not bear grafts well and is worked with difficulty in either field or bench grafting; and lastly the French find it very subject to chlorosis, especially in calcareous soils.

The vine is, according to all accounts, a remarkably vigorous, rapid and healthy grower, being hardly surpassed in these characters by any of our native grapes. The wood is strong, abundant and very hard, the latter a serious difficulty in grafting. The fruits are attractive because of the size of the bunch and the glossy black of the berries, which are small as compared with northern grapes. Fruit is borne abundantly and with certainty year in and year out in suitable localities. The flesh characters of the fruit are good for a small grape, neither flesh, skin nor seeds being especially objectionable in eating; the pulp is tender and juicy; rich, sweet and highly flavored, the combination of flesh and flavor characters giving a grape of high quality. Herbemont is greatly esteemed as a table grape and is said

to make a very good light red wine. The ample, lustrous green foliage makes the variety one of the attractive ornamental plants of the South.

Herbemont has been much used in grape-breeding and to advantage, for probably no other species offers as many desirable characters for the South and Southwest as the one to which this variety belongs and best represents. There are now several pure-bred seedlings of Herbemont under cultivation and a greater number in which it is one of the parents. Of the former Black Herbemont and the Onderdonk are good representatives and Jaeger, Delicious, Muench, Vinita, Perry, Mrs. Munson and Neva Munson, all from Munson of Texas, are Herbemont cross-breeds.

The history of Herbemont, as it must be written from such information as can now be obtained, is scarcely more than a collection of mythical stories The variety is known to have been in cultivation in Georgia before the Revolutionary War, when it was generally known under the name of Warrenton or Warren. In the early part of the last century it came to the hands of Nicholas Herbemont of Columbia, South Carolina, who gave it the name Madeira under a temporary supposition that it came from the island of that name. This name was generally changed to Herbemont's Madeira. Herbemont made the variety known to the public, sending it to William R. Prince of Flushing, Long Island, and Nicholas Longworth of Cincinnati, the two most prominent viticulturists of that time who, in turn, aided in its distribution.

There have been many contradictory accounts of the origin of the grape, crediting it to Georgia, the Carolinas, or Europe. None is supported by sufficient evidence to make it creditable and most of them arose at so late a date that it was impossible for the writers to know anything about the facts of the case except by hearsay evidence. The early idea of many that it is a Vinifera was soon dropped. Later this variety and others of its class were known as southern Aestivalis; however, it was admitted that they were unlike other southern Aestivalis. Munson gave these grapes the name Bourquiniana, a name that has been accepted as a convenient designation for the group by some who do not accept his account of its origin. The Herbemont and Lenoir are the two varieties commonly referred to as typical of this so-called species.

The history of the culture of Herbemont in the North has been the

serious faults. Iona rivals Delaware as the standard in quality of American grapes, though if flavor alone be considered, grape connoisseurs generally agree that it surpasses Delaware and is the finest flavored of all our grapes.

In flavor Iona has a rare combination of sweetness and acidity, pure, delicate and vinous. The flesh is transparent, melting, tender, juicy, and of uniform consistence quite to the center. The seeds are few and small and part readily from the flesh. The color is a peculiar dark-red wine with a tint of amethyst, somewhat variable and not always attractive. The bunch, at its best, is large but rather loose with berries varying somewhat in size and ripening unevenly. It cannot be called a particularly handsome grape. The fruit does not decay readily and may be kept in a good fruit room until late winter without loss of flavor and with the berries adhering to the bunch. Beside being a most excellent table grape, it is much sought for by wine-makers for champagne and for making finely-flavored white wines.

The vine characters of Iona are not nearly as good as those of the fruit. To do well it must have a soil exactly suited to its wants. Seemingly it does best in deep, dry, sandy or gravelly clays and cannot be grown in damp, rich, black soils on the one hand nor poor sands or gravels on the other. Vergil's lines as to the treatment of soils for vines are especially applicable to the Iona.

> "A free loose earth is what the vines demand,
> Where wind and frost have help'd the lab'rer's hand,
> And sturdy peasants deep have stirr'd the land."

This variety does especially well when trained against walls or buildings, attaining under such conditions rare perfection. It is not hardy in any but favored localities in New York and in many parts of the State must have careful winter protection. The vines are not vigorous and are inclined to overbear, to remedy which it must have close pruning, or be grafted on a strong growing stock. In localities where mildew and rot thrive Iona is badly attacked by these diseases. The vines bear early and the fruit ripens at mid-season or shortly after. Iona is a grape for the amateur and for the careful vineyardist. Few varieties are more desirable or satisfactory

for the garden when planted in soils to which it is adapted, when given good care, properly protected from cold, and the vines restrained from overbearing.

Iona was originated by Dr. C. W. Grant[1] of Iona Island, Westchester County, New York, and the name commemorates the scene of the viticultural labors of one of the founders of American viticulture. Grant states that Iona is from seed of Diana planted in 1855, the plant from which fruited for the first time four years later. Caywood, however, says that Grant informed him that it was found growing as a chance seedling under a Catawba vine. Since Diana is a seedling of Catawba there is too little difference in the character of the older varieties to enable one to tell from which Iona came. This variety[2] was awarded the Greeley prize of $100, offered by Horace Greeley during the Civil War for a grape adapted to general cultivation in the Eastern and Middle States. The requirements which a variety had to possess to secure this prize were certainly sufficiently high; it was asked that the vine should be as hardy, healthy and vigorous as the strongest American vine and the fruit of a quality equal to the best European. Such a grape would be a boon to European as well as to American grape-growers. Though the prize went to Iona it must not be thought that it meets these requirements.

Iona was introduced by the originator in 1864. It was overpraised, extensively advertised, and for some time the prices of vines were kept at

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[1] Dr. C. W. Grant was born in Litchfield, Connecticut, in 1810. Early in life he became a Doctor of Medicine but soon became dissatisfied with that profession as it was then practiced, and entered dentistry. He settled in Newburgh, New York, where he built up a very large dental practice. Dr. Grant was an enthusiastic amateur horticulturist and numbered among his friends such men of national note as A. J. and Charles Downing, Horace Greeley, Henry Ward Beecher, W. C. Bryant, Donald G. Mitchell and others like these who were interested in rural pursuits. He bought Iona Island in the Hudson River and planted thereon a commercial vineyard. On the death of his wife in 1856 he gave up his dental practice and took up his residence on Iona Island. Here for twelve years he grew grapes and conducted a grape nursery. Unfortunately Dr. Grant's business experience was not such as to enable him to make a success of a commercial nursery. In 1868 he retired from active pursuits and returned to his old home at Litchfield, where he died in 1881. Dr. Grant's chief interest to grape-growers lies in the fact that he was the originator of Iona and Israella and the introducer of Anna and Eumelan. He was one of the first and a most ardent grape-breeder, working especially toward improving the quality of commercial varieties of grapes.

[2] On account of criticisms of the justice of the award, Grant returned the prize to be competed for a second time. At the second trial it went to Concord on vine characters.

Vine variable in vigor, not always hardy, somewhat uncertain in bearing. Canes intermediate in length and number, above average thickness, dark reddish-brown; nodes enlarged and flattened; internodes of fair length; diaphragm thick; pith medium to below in size; shoots slightly pubescent to nearly glabrous; tendrils intermittent to continuous, intermediate in length, bifid to trifid.

Leaf-buds rather small and short, medium to slender, conical to pointed, open late. Young leaves faintly tinged on the under side only with rose-carmine. Leaves medium to large, often irregularly roundish, thick; upper surface light green, dull, medium to slightly rugose; lower surface pale green to bronze, heavily pubescent; veins distinct; lobes three when present with angle at terminus variable; petiolar sinus not uniform in depth, narrow, sometimes closed and overlapping; basal sinus usually none; lateral sinus shallow, narrow, often a mere notch; teeth very shallow, narrow to medium. Flowers semi-fertile, open after mid-season; stamens upright.

Fruit ripens about with Concord, keeps and ships well. Clusters large but smaller than Niagara, long to medium, inclined to slender, cylindrical to slightly tapering, often blunt, usually not shouldered, one to two bunches per shoot, medium to compact; peduncle long and slender; pedicel long, moderately slender, covered with numerous small warts; brush of average size, not thick, yellowish-green with brown tinge. Berries above medium in size, inclined to oval, attractive greenish-yellow, rather glossy, covered with thin gray bloom, persistent, firm. Skin thin to medium, tough, adheres slightly to the pulp, contains no pigment, astringent. Flesh greenish-white, somewhat transparent, juicy, tender and melting, aromatic, sweet from skin to center, very good to best. Seeds separate easily from the pulp, two to four in number, average two, above medium in size, intermediate in length and breadth, plump, light brown; raphe obscure; chalaza large, slightly above center, irregularly circular, distinct.

HIGHLAND.

(Vinifera, Labrusca.)

1. *Gar. Mon.*, **16**:375. 1874. 2. *Horticulturist*, **29**:329. 1874. 3. *Gar. Mon.*, **21**:149. 1879. 4. *W. N. Y. Hort. Soc. Rpt.*, **27**:29. 1882. 5. *Ohio Hort. Soc. Rpt.*, **1882–3**:46. 6. *Bush. Cat.*, **1883**:109. 7. *N. Y. Sta. An. Rpt.*, **11**:626. 1892. 8. *Ib.*, **17**:531, 548, 552. 1898. 9. *Kan. Sta. Bul.*, **110**:241. 1902.

Ricketts' No. 37 (2). *Ricketts' No. 87* (1, 6).

Highland has been on trial in New York for at least thirty years but has not become widely distributed, though few varieties of black grapes surpass it or equal it in appearance or in quality. The chief trouble has been that the variety is too late for New York, ripening with, or a little later than Catawba. When given good care and under favorable conditions the bunches are unusually large and handsome in appearance, sometimes attaining a weight of two pounds and having beautiful bluish-black berries

with something of the fine flavor and tender texture of the Jura Muscat, one of its parents. The flesh is solid, and while the skin is thin, yet it is firm and the fruit keeps and ships well. The vine is fairly vigorous but doubtfully hardy and productive to a fault. In all localities where the climate is sufficiently temperate and the season sufficiently long for vine and fruit of Highland to develop perfectly, it is one of the choicest of grapes for the amateur.

This fine grape was originated at about the close of the Civil War by James H. Ricketts of Newburgh, New York, from seed of Concord fertilized by Jura Muscat. It was introduced by Messrs. Asher Hance & Sons, who bought it of the originator. It is very common in varietal vineyards but it has not become popular as a commercial sort; it is a popular grape for exhibitions where, when well grown, it is hardly surpassed in appearance by any other American grape.

Vine variable in vigor, productive, healthy, often inclined to overbear. Canes long, numerous, medium to thick, light and dark brown, often with a dull, ash-gray tinge, covered with thin bloom; nodes strongly enlarged, not flattened; internodes medium to very long; diaphragm thick; pith large to medium; shoots usually pubescent; tendrils intermittent, of average length, bifid to trifid.

Leaf-buds large to medium, rather short and thick, obtuse to conical. Leaves large, intermediate in thickness, upper surface often dark green, dull, medium to rugose; lower surface grayish-green, pubescent; veins rather indistinct; lobes none to five, with terminal lobe acute to obtuse; petiolar sinus rather deep, variable in width; basal sinus shallow, narrow; lateral sinus of average depth and width, sometimes a mere notch; teeth rather deep and wide. Flowers fertile or nearly so, open in mid-season; stamens upright.

Fruit ripens with Catawba or after, keeps fairly well. Clusters large, rather long and broad, tapering, usually single-shouldered but sometimes with a double shoulder, usually two bunches per shoot, intermediate in compactness; peduncle of average length and thickness; pedicel long to medium, moderately thick, nearly smooth; brush below average length, green with yellowish-brown tinge. Berries large, roundish-oval, dark purplish-black to bluish-black, rather dull, covered with dark lilac or slightly blue bloom, persistent, moderately firm. Skin intermediate in thickness, tough, nearly free from the pulp, contains little, if any, pigment, not astringent. Flesh greenish, translucent, juicy, somewhat tender, slightly vinous, good in quality. Seeds separate rather easily from the pulp, one to six, average three, above medium to large, nearly long, intermediate in breadth, slightly notched with a one-sided tendency, riper seeds brownish; raphe obscure; chalaza of average size, above center, variable in shape, not distinct.

HIGHLAND

HOSFORD.

(Labrusca.)

1. *Can. Hort.*, 11:287. 1888. 2. *Rural N. Y.*, 49:737, *fig.*, 739, 856. 1890. 3. *U. S. D. A. Rpt.*, 1892:264. 4. *Bush. Cat.*, 1894:138. 5. *Am. Pom. Soc. Rpt.*, 1894:75. 6. *Mich. Sta. Bul.*, 169:171. 1899. 7. *Ga. Sta. Bul.*, 53:45. 1901.

Hosford's Mammoth Seedling (2). Hosford's Seedling (1).

Hosford is an offspring of Concord, differing from the parent chiefly in the greater size of bunch and berry and in being less fruitful. The variety is surpassed by Worden and Eaton, of the same type, and is probably not worth cultivation. It is claimed by some that this variety is identical with Eaton. It is true that Hosford has a marked resemblance to Eaton but there are noticeable differences in both vine and fruit characters and the pure seedlings of the two varieties are entirely different, those of Eaton being much darker in color and more vigorous. Hosford was sent out several years before Eaton. The vine of this variety looks very much like Concord except that the indentations along the margins of the leaves are deeper.

As a rule the black seedlings of Concord which have been introduced are larger in cluster and berry than the parent and either not as high in quality or no higher, differing materially from Concord's light-colored seedlings, which are usually smaller in bunch and berry, or at least not larger, and of distinctly better quality. Hosford is a typical black seedling in the above respects.

This variety originated in the garden of George Hosford of Ionia, Michigan. It was found by the owner about 1876 as a chance seedling growing between two Concord vines.

Vine not very vigorous, nearly hardy, unproductive. Canes short, few in number, rather slender; tendrils continuous, bifid to trifid. Leaves medium to below in size, intermediate in thickness; lower surface grayish-white to bronze, heavily pubescent. Flowers semi-fertile, open in mid-season; stamens upright. Fruit ripens shortly before Concord, does not keep very well. Clusters medium to large, tapering, slightly shouldered, moderately compact. Berries large to medium, roundish to slightly oval, dull black covered with abundant blue bloom, persistent. Skin medium to thick, tender. Flesh very pale green, unusually juicy, fine-grained, rather tender, vinous, sweet, good in quality. Seeds not numerous, nearly large, very broad, blunt, plump.

HYBRID FRANC.

(Vinifera, Rupestris.)

1. *Am. Vines*, 1903:190.
FRANC'S HYBRID (1).

Hybrid Franc is illustrated and described in full in *The Grapes of New York* because it is the best known cross between Rupestris and Vinifera. It is one of the few varieties used in Europe as a resistant stock now recommended for a direct producer. The vine characters are seemingly all good,—hardy, vigorous and very productive. The fruit is fit only for wine being too acid for a table grape. The coloring matter in the fruit is very intense and it might be used for giving color to wines. Hybrid Franc is of much interest to the grape-breeder, and experiments with it as a parent are desirable for New York. The variety is of French origin.

Vine vigorous, hardy, productive. Canes variable in length, numerous, thick to medium, light brown, covered with slight blue bloom; nodes enlarged, roundish; internodes very short; diaphragm thin; pith unusually large; shoots glabrous; tendrils intermittent, often rather long, bifid to trifid.

Leaf-buds large to medium, short, above average thickness, obtuse to conical, open moderately late. Young leaves tinged on upper and lower sides with carmine; the tips of the buds in opening show strongly the leaf serrations. Leaves very small to medium, rather thin; upper surface light green, decidedly glossy, smooth; lower surface greenish, showing Riparia characters, quite hairy along ribs and larger veins; lobes usually three to five with terminal lobe acute to acuminate; petiolar sinus intermediate in depth, narrow to medium, sometimes closed and overlapping; basal sinus of average depth and width; lateral sinus medium in depth to a mere notch; teeth intermediate in depth and width. Flowers semi-fertile, open early; stamens upright.

Fruit ripens before mid-season, does not always keep well. Clusters medium to below in size, short, intermediate in breadth, tapering to cylindrical, usually single-shouldered, average three bunches per shoot, medium to compact; peduncle below medium length, rather slender; pedicel long, slender, covered with few, small, inconspicuous warts; brush short, wine-colored. Berries below medium to small, uniform, slightly oblate to roundish, black, glossy, covered with thick, blue bloom, persistent, firm. Skin thin, tender, does not adhere to the pulp, contains a very dark wine-colored pigment, not astringent. Flesh pale green, often with a slight reddish tinge, translucent, juicy, fine-grained, somewhat tender, spicy, tart to acid, fair in quality. Seeds separate easily from the pulp, one to five, average three and four, medium to small, rather short, intermediate in breadth, light brown; raphe obscure; chalaza of average size, slightly above center, oval to pear-shaped, distinct.

HYBRID FRANC

IDEAL.

(Labrusca, Vinifera, Bourquiniana.)

1. *Kan. Hort. Soc. Rpt.*, 1886:187. 2. *Mo. Hort. Soc. Rpt.*, 1890:155. 3. *Ib.*, 1891:128. 4. *Bush. Cat.*, 1894:140. 5. *Ill. Hort. Soc. Rpt.*, 1897:16. 6. *Va. Sta. Bul.*, 94:137. 1898. 7. *Mo. Sta. Bul.*, 46:30, 42, 44, 46, 55. 1899. 8. Budd-Hansen, 2:380. 1902.

Burr No. 9 (1).

Ideal is a handsome seedling of the Delaware, from which it differs chiefly in being much larger in bunch and berry, attaining in both of these characters nearly the size of Catawba. In Kansas and Missouri it is most highly recommended, not only for the high quality of the fruit, ranking with Delaware in quality, but because of vigorous, healthy, productive vines. But in New York, on the Station grounds at least, the vines are precariously hardy and not sufficiently fruitful, healthy nor vigorous to warrant a very high recommendation for the variety. Were the variety of recent introduction it might be recommended for trial but it has been grown for more than twenty years and has, therefore, been well tried and has not proved of general value. It may be worth planting for home use.

Originated by John Burr of Leavenworth, Kansas, over thirty years ago from seed of Delaware, the attention of the public was attracted to Ideal about 1890, first by glowing descriptions of the variety from the originator and his friend and co-worker, Dr. Stayman, and later by reports from various persons who had tested the variety. It does not appear to have ever been regularly introduced but was sent to various persons for testing by whom it was distributed. It is now found only in the occasional variety vineyard and apparently not offered for sale by any nurserymen. Ideal is better known, and possibly succeeds better in the West than in the East.

Vine medium to vigorous, not always hardy, productive, but yielding smaller crops than Concord; tendrils intermittent, bifid to trifid. Canes long, numerous, rather slender. Leaves medium to large, variable in color; lower surface pale green, slightly pubescent and cobwebby. Fruit ripens about with Delaware, keeps only fairly well. Clusters large to above medium, long to medium, often rather broad and heavily shouldered, intermediate in compactness. Berries large, roundish, attractive dark red, covered with abundant lilac bloom, often with tinge of blue, usually persistent, firm. Flesh greenish, moderately tender, aromatic, nearly sweet next the skin to acid at center, good to very good in quality. Seeds adherent, large, plump.

IMPERIAL.

(Vinifera, Labrusca.)

1. *Horticulturist*, 29:328. 1874. 2. *Am. Pom. Soc. Rpt.*, 1875:114. 3. *W. N. Y. Hort. Soc. Rpt.*, 1891:45. 4. *Bush. Cat.*, 1894:140.

No. 93 A (1).

Although introduced nearly forty years ago, Imperial is still little known and does not appear to have especial value. Perhaps its most valuable character is hardiness as it is reputed to be as hardy as Concord which, for a grape having its proportion of Vinifera blood, is the exception. In appearance and quality Imperial is very good and were its vine characters better, and were there not so many excellent green grapes of its season with which it must compete, the variety would be more generally cultivated.

Imperial is a seedling of Iona fertilized by Sarbelle Muscat and was raised by J. H. Ricketts of Newburgh, New York, over thirty years ago. The following description has been compiled from various sources:

Vine vigorous, healthy, hardy. Leaves large, attractive green. Fruit ripens late. Clusters large, symmetrical, slightly shouldered, rather compact. Berries large, greenish-white, covered with considerable bloom. Flesh tender, juicy, vinous, sprightly, not high in flavor but agreeable, good to very good in quality. Seeds small, not numerous.

IONA.

(Labrusca, Vinifera.)

1. *Horticulturist*, 18:313. 1863. 2. *Mag. Hort.*, 29:420. 1863. 3. Grant, *Descript. Cat.*, 1864:8, 9, 18, 19, 21, 32. 4. Grant, *Grape Vines*, 1864:1, 2, 3, 5, 11, 12. 5. *Am. Pom. Soc. Cat.*, 1867:44. 6. *Am. Pom. Soc. Rpt.*, 1867:105. 7. *Iowa Hort. Soc. Rpt.*, 1867:108. 8. *Am. Jour. Hort.*, 5:15, 187, 298, 299. 1869. 9. *Horticulturist*, 25:186. 1870. 10. *Am. Pom. Soc. Rpt.*, 1871:69. 11. *Horticulturist*, 29:20, 245. 1874. 12. *Mich. Pom. Soc. Rpt.*, 1875:355. 13. *Am. Pom. Soc. Rpt.*, 1881:39. 14. *Mich. Pom. Soc. Rpt.*, 1881:222. 15. *W. N. Y. Hort. Soc. Rpt.*, 31:120. 1886. 16. *N. Y. Sta. An. Rpt.*, 9:328. 1890. 17. *Col. Sta. Bul.*, 29:21. 1894. 18. *Bush. Cat.*, 1894:140. 19. *N. Y. Sta. An. Rpt.*, 17:531, 548, 552, 555, 559. 1898. 20. *Va. Sta. Bul.*, 94:137. 1898. 21. *Miss. Sta. Bul.*, 56:15. 1899. 22. *Mo. Sta. Bul.*, 46:39, 43, 44, 45, 51, 76. 1899.

Iona is probably surpassed in delicacy and sprightliness of flavor, in keeping quality, and for making certain wines, as champagne, by few, if any, other American grapes. In spite of these several good qualities it has never been very generally grown, chiefly for the reason that it requires more care than commercial grape-growers are willing to give grapes, though, beside requiring the best of care, its cultivation is hindered by several

IONA

serious faults. Iona rivals Delaware as the standard in quality of American grapes, though if flavor alone be considered, grape connoisseurs generally agree that it surpasses Delaware and is the finest flavored of all our grapes.

In flavor Iona has a rare combination of sweetness and acidity, pure, delicate and vinous. The flesh is transparent, melting, tender, juicy, and of uniform consistence quite to the center. The seeds are few and small and part readily from the flesh. The color is a peculiar dark-red wine with a tint of amethyst, somewhat variable and not always attractive. The bunch, at its best, is large but rather loose with berries varying somewhat in size and ripening unevenly. It cannot be called a particularly handsome grape. The fruit does not decay readily and may be kept in a good fruit room until late winter without loss of flavor and with the berries adhering to the bunch. Beside being a most excellent table grape, it is much sought for by wine-makers for champagne and for making finely-flavored white wines.

The vine characters of Iona are not nearly as good as those of the fruit. To do well it must have a soil exactly suited to its wants. Seemingly it does best in deep, dry, sandy or gravelly clays and cannot be grown in damp, rich, black soils on the one hand nor poor sands or gravels on the other. Vergil's lines as to the treatment of soils for vines are especially applicable to the Iona.

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This variety does especially well when trained against walls or buildings, attaining under such conditions rare perfection. It is not hardy in any but favored localities in New York and in many parts of the State must have careful winter protection. The vines are not vigorous and are inclined to overbear, to remedy which it must have close pruning, or be grafted on a strong growing stock. In localities where mildew and rot thrive Iona is badly attacked by these diseases. The vines bear early and the fruit ripens at mid-season or shortly after. Iona is a grape for the amateur and for the careful vineyardist. Few varieties are more desirable or satisfactory

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an exorbitant figure from which there was a reaction detrimental to the variety. It was placed on the grape list of the American Pomological Society fruit catalog in 1867. Probably no American variety has been the subject of more caustic discussions than this one and it is only within the last few years that its merits could be impartially estimated. Iona was extensively tried in all the grape regions of America but has been generally dropped as a commercial grape. It is still to be found in all varietal vineyards, in occasional commercial plantings and somewhat commonly in gardens.

Vine medium to weak, precariously hardy, unproductive, often susceptible to attacks of mildew. Canes short to medium, of average number and size, light brown; nodes enlarged, roundish; internodes short; diaphragm thick; pith nearly intermediate in size; shoots show some pubescence; tendrils intermittent, of average length, bifid.

Leaf-buds about medium in size, short to medium, thick, conical to pointed, open very late. Young leaves tinged on under side and along margin of upper side with carmine; often heavily coated with thick, whitish pubescence. Leaves of average size, thick; upper surface light green, dull, smooth to medium; lower surface grayish-green, heavily pubescent, somewhat cobwebby; veins indistinct; lobes three to five with terminal lobe acute; petiolar sinus intermediate in depth and width; basal sinus shallow, medium to wide; lateral sinus shallow, wide; teeth not deep, of average width. Flowers nearly fertile, open late; stamens upright.

Fruit ripens later than Concord, keeps well. Clusters above medium to small, sometimes double-shouldered, intermediate in length, somewhat slender, slightly tapering to conical, medium to loose; peduncle short and slender; pedicel intermediate in length, slender, nearly smooth, enlarged at point of attachment to fruit; brush of average length, not thick, pale green. Berries intermediate in size, uniform, oval to nearly roundish, dull, light and dark red, covered with thin lilac bloom, persistent, firm. Skin of medium thickness, tough, adheres considerably to the pulp, contains no pigment, slightly astringent. Flesh greenish, translucent, juicy, fine-grained, tender and melting, vinous, very good in quality. Seeds separate easily, one to four in number, average three, small and broad, plump, brownish; raphe usually obscure but sometimes distinct; chalaza small, nearly central, circular, distinct. Must 88°–100°.

IRONCLAD.

(Riparia, Labrusca.)

1. *Ohio Hort. Soc. Rpt.*, 1882–3:131. 2. *Gar. and For.*, 5:597. 1892. 3. *Ill. Sta. Bul.*, 28:254. 1893. 4. *Gar. and For.*, 7:509. 1894. 5. *Bush. Cat.*, 1894:140.

Ash (1, 4, 5). *Diogenes* (5). PEARSON'S IRONCLAD (4). *Pearson's Ironclad* (5). *Scott* (4, 5).

Ironclad is of interest because of its history, and because of its possible value for breeding purposes. If the history given below is correct, this variety is one of the oldest of our cultivated grapes. From the accounts of those who have grown it, Ironclad is as free from mildew and rot, in fruit at least, as any of our cultivated native grapes. It is also very resistant to phylloxera and has been used somewhat in France and Spain as a resistant stock for Vinifera. It is also extremely vigorous and hardy and is very productive. The fruit is not of sufficiently high quality nor attractive enough in appearance to make a good table grape but it is said to make very excellent wine, the juice having color and body enough to make it of value for adding color to lighter colored musts. Ironclad is a very capricious bearer and especially so on rampant growing vines, one of the faults of the variety being that it makes too rank a growth.

The history of this grape, as given by A. W. Pearson of Vineland, New Jersey, is as follows: In 1873 Pearson secured from Colonel Scott, then president of the Pennsylvania Railroad Company, cuttings of a vine growing on the latter's grounds, near Darby about seven miles west of Philadelphia. Scott's gardener reported the vine to be free from rot and Pearson, who had named the variety Scott, changed the name to Ironclad when he found the gardener's report as to rot verified. On investigation Pearson found that the variety was over two hundred years old, and that it had been cultivated locally under the name of Ash, from a former owner of the Scott place and an ancestor of Pearson. This account is not fully corroborated by early horticultural writers but appears to be sufficiently accurate to give the variety historical interest. Ironclad is said to be a hybrid between Labrusca and Riparia and its botanical characters justify such a supposition.

Vine a rank grower, hardy, productive. Canes long, numerous, thick to slender, dark reddish-brown; nodes of average size, flattened; internodes medium to long;

IRONCLAD

diaphragm thin; pith large to medium; shoots glabrous; tendrils continuous, of fair length, bifid to sometimes trifid.

Leaf-buds small, short, slender to medium, conical to pointed. Leaves of medium size, intermediate in thickness; upper surface dark green, somewhat glossy, smoothish; lower surface pale green, slightly pubescent; veins rather distinct; lobes none to three with terminal lobe acute to acuminate; petiolar sinus intermediate in depth and width; basal sinus usually lacking; lateral sinus shallow, usually wide; teeth intermediate in depth and width. Flowers open early; stamens reflexed.

Fruit ripens about with Concord but colors early, appears to keep well. Clusters small and short, slightly tapering, sometimes single-shouldered, variable in compactness; peduncle short, inclined to slender; pedicel short, slender to medium, covered with numerous inconspicuous warts; brush short, of average thickness, dark wine color. Berries irregular in size, averaging small, roundish to slightly oblate, jet-black, glossy, covered slightly with blue bloom, usually persistent, firm. Skin intermediate in thickness, tough, adheres slightly to the pulp, contains a large amount of dark purplish-red pigment, not astringent. Flesh greenish, with distinct tinge of red, rather transparent, moderately juicy, somewhat tender, fine-grained, spicy, sweet to agreeably tart at center, not good enough in quality for dessert purposes. Seeds separate from the pulp somewhat easily, one to four in number, average two, intermediate in size and breadth, short to medium, sharp-pointed, dark brownish; raphe buried in a shallow, narrow groove; chalaza large with surface roughened and warty, central to slightly above, irregularly pear-shaped, distinct.

ISABELLA.

(Labrusca, Vinifera.)

1. *Amer. Farmer*, 5:241. 1823. 2. *Ib.*, 9:221, 294, 309, 325. 1827. 3. *Sou. Agr.*, 2:552. 1829. 4. Prince, 1830:165. 5. Spooner, 1846:13, 29, 49. 6. *Horticulturist*, 6:410, 412. 1851. 7. *U. S. Pat. Off. Rpt.*, 1851:48–51. 8. *Am. Pom. Soc. Cat.*, 1852:54. 9. *Horticulturist*, 15:73. 1860. 10. *Gar. Mon.*, 2:156, 265. 1860. 11. *Ib.*, 5:73, 74. 1863. 12. *N. Y. Agr. Soc. Rpt.*, 1864:42, 45, 141. 13. *Mag. Hort.*, 31:107, 157. 1865. 14. Husmann, 1866:18, 79, 122. 15. Downing, 1869:542. 16. *Grape Cult.*, 2:76. 1870. 17. *Ib.*, 3:67, 103. 1871. 18. *Gar. Mon.*, 14:105, 167, 296. 1872. 19. *Horticulturist*, 29:20, 245. 1874. 20. *Am. Pom. Soc. Rpt.*, 1883:57, 124, 128. 21. *Bush. Cat.*, 1883:110. 22. *Rural N. Y.*, 50:418, 482. 1891. 23. *Ill. Sta. Bul.*, 28:255. 1893. 24. *Kan. Sta. Bul.*, 44:116. 1893. 25. *N. Y. Sta. An. Rpt.*, 15:432, 433. 1896. 26. *N. Y. Sta. An. Rpt.*, 17:531, 541, 544, 548, 552. 1898. 27. *Ala. Sta. Bul.*, 110:83. 1900. 28. *Rural N. Y.*, 59:719, 722. 1900. *fig.* 29. *Traité gen. de vit.*, 5:203. 1903.

Alexander (29). *Black Cape* (29). *Cape* (29). *Captraube* (29). *Champania* (29). *Cherokee?* (11). *Christie's Improved Isabella* (15, 21, 29). *Conckling's Wilding* (11). *Constantia* (29). DORCHESTER (1). *Framboisier* (29). *Garber's Red-Fox* (29). *Gibb's grape* (4, 11, 18). *Hanover (southern)* (11). *Hensell's Long Island* (11). *Isabella* (1). *Isabelle d'Amerique* (29). *Lespeyre* (2, 10, 11, 18). *New Hanover* (11). *Paign's Isabella* (15, 21, 29). *Payne's Early* (11, 15, 21, 29). *Raisin de Cassis* (29). *Raisin du Cap* (29). *Raisin Fraise* (29). *Raisin Framboise* (29). *Sainte-Helene* (29). *Saluda* (11). *Sanbornton?* (15, 21, 29). *Schuylkill?* (29). *Uva Fragola* (29). *Vernet* (6, 11, 18). *Woodward* (15, 21, 29).

Isabella is now of little more than historical interest yet for a half century after its introduction, about 1816, it and Catawba were the mainstays of American viticulture. In the early days of grape-growing in this country Isabella was the grape of the North Atlantic and New England States while the vineyards of the South were planted with Catawba, the latter requiring too long a season and being too susceptible to fungal diseases for a northern grape. Isabella has been almost wholly replaced in the North by Concord, because the latter is earlier, hardier and more productive, and the older variety can now hardly be found except in the collections of experimenters and amateurs.

In appearance Isabella is quite as attractive as any of the black grapes, having large, well-formed clusters and a deep black color with thick bloom. The flavor is good but the thick skin and muskiness in taste are objectionable. The fruit keeps and ships well and seldom rattles or cracks but the variety is surpassed in vine characters by many other standard kinds, notably Concord, which, as stated above, has taken its place. The lustrous green, ample foliage which remains late in the season, and the vigor of Isabella, make it an attractive ornamental, well adapted for growing on arbors, porches and trellises. Individual vines of this variety growing in New York, the Middle States, and New England, realize more than any other grape that ideal of peace and plenty for which the grape has been the symbol since the vines of Judah and of Israel. While it is of small commercial importance, Isabella is still worthy a place in the garden and as an ornamental.

The origin of Isabella is not certainly known. It was secured by William Prince of Flushing, Long Island, from Mrs. Isabella Gibbs, the wife of Geo. Gibbs, a merchant then living in Brooklyn, New York. Prince states that he first saw this grape in 1816 and was so struck with its appearance that he considered it worthy of a name and introduction to the public. It was consequently named in honor of Mrs. Gibbs and introduced shortly after 1816. In answer to a request from Prince as to the place of its origin, Mrs. Gibbs reported that it had come originally from the vicinity of Dorchester, South Carolina. This account of its origin was published at the time in several agricultural periodicals and later in Prince's *Treatise on the Vine*. The whole question was thoroughly discussed in the agricultural

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press of that day but without a satisfactory solution of the place of its nativity.

Nicholas Herbemont[1] who sought the history of the variety in the neighborhood of Dorchester, South Carolina, doubted its having originated there, as he found it known only as a cultivated sort with a tradition of its having been introduced years before by a gentleman then dead. There were various accounts published of its having originated in North Carolina, Virginia, Delaware and Europe, none of which are worthy of any credence. All that can be said is that it originated some time in the eighteenth century, probably in one of the Carolinas and that it was cultivated in many widely separated neighborhoods prior to 1800.

In 1852 Isabella was placed on the grape list of the American Pomological Society fruit catalog, for general cultivation. In 1864, on account of its susceptibility to mildew it was transferred to a list for cultivation in special localities. It was soon, however, restored to the original list where it still remains. After the introduction of Concord, as noted above, the popularity of Isabella waned but it is still to be found in many sections as one of the less planted of the market sorts and is in practically all varietal vineyards It was introduced into Europe before 1830 where it was quite extensively cultivated for the manufacture of a low grade wine, and it is quite probable that the phylloxera, which later became such a pest, was introduced on roots of the Isabella.

Isabella is generally classed as a pure Labrusca but there are many who think there is a strain of Vinifera present. This is indicated by the shape of the berries, certain characters of the seeds, the susceptibility of the vine to mildew and of the fruit to black-rot. The characters of Isabella can be traced in a great number of offspring though comparatively few of them have outlived the parent in usefulness. Pure-bred progeny of the Isabella differ but little from the parent and are classed as strains of the original rather than as new varieties. Hybrids of it with pure Vinifera are usually worthless, lacking in vigor and hardiness, and so much more so than in the case of hybrids of Vinifera and known pure American grapes as to further suggest Vinifera blood in Isabella. Such hybrids, too, usually

[1] *Sou. Agr.*, 2:552. 1829.

bear a stronger resemblance to the Old World grape than offspring of pure-bred parents of the two species.

Vine vigorous to medium, usually hardy, variable in productiveness, but sometimes producing heavy crops, somewhat subject to mildew in certain locations. Canes short to above medium, numerous, covered with heavy pubescence, thick, light to dark brown; nodes enlarged, strongly flattened; internodes short to medium; diaphragm thick; pith intermediate to below in size; shoots covered with heavy pubescence; tendrils continuous, long, bifid to trifid.

Leaf-buds small, short, thickish, conical, open very late. Young leaves tinged on lower side and along margin of upper side with light rose carmine. Leaves intermediate in size, often roundish, thick; upper surface dark green, smooth to medium, glossy; lower surface whitish-green, heavily pubescent; veins distinct; lobes three when present with terminal lobe obtuse to acute; petiolar sinus shallow to medium, narrow, often closed and overlapping; basal sinus usually none; lateral sinus shallow, narrow, frequently notched; teeth shallow, medium to wide. Flowers usually strongly self-fertile, open in mid-season; stamens upright.

Fruit usually ripens with Catawba or earlier, keeps and ships well. Clusters large to medium, intermediate in length, nearly cylindrical to conical, frequently single-shouldered, variable in compactness; peduncle short to medium, thick; pedicel variable in length, slender, almost smooth, much enlarged at point of attachment to fruit; brush long, yellowish-green. Berries variable in size, medium to large, oval, deep black, color long before ripe, covered with considerable blue bloom, usually persistent, soft. Skin thick to medium, very tough, adheres considerably to the pulp, contains no pigment, astringent. Flesh pale green, sometimes with yellowish tinge, translucent, juicy, fine-grained, tender but meaty, somewhat stringy, inclined to foxiness, sweet to agreeably tart at center, slightly astringent when not mature, ranks good in quality. Seeds separate from the pulp with some difficulty unless fully ripe, one to three in number, average two, large to medium, broad, distinctly notched, above medium to short, brownish with yellow tips; raphe obscure; chalaza small, above center, circular, rather distinct. Must 60°–79°.

ISABELLA SEEDLING.

(Labrusca, Vinifera.)

1. *N. Y. Sta. An. Rpt.*, 11:636. 1892. 2. *Ib.*, 13:604. 1894. 3. *Bush. Cat.*, 1894:141. 4. *N. Y. Sta. An. Rpt.*, 17:531, 548, 555, 559. 1898.

Isabella Seedling is an early, vigorous, productive offspring of Isabella. In fruit characters it greatly resembles its parent but is much earlier, ripening shortly after Moore Early, and has a more compact bunch. Like its parent, the fruit is of good quality and keeps remarkably well for so early

a grape. It is now grown in New York more than Isabella and while not of any considerable commercial importance, is far more deserving attention as a market grape than some of the poorly flavored kinds more generally grown.

There are several varieties under this name. Two are mentioned by Warder; one of Ohio and one of New York origin. The Isabella Seedling here described was originated by G. A. Ensenberger, Sr., of Bloomington, Illinois, who sent it to this Station for testing in 1889. Full details of the origin and history of this grape are not known, Mr. Ensenberger having died soon after its dissemination, without leaving a record of his work.

Vine vigorous to very vigorous, usually hardy, healthy, productive. Canes long to medium, intermediate in number, thickish, dark brown, often with a tinge of red, surface covered with thin bloom; tendrils intermittent to continuous, bifid. Leaves healthy, medium to large, rather thick; upper surface medium green, dull, of average smoothness; lower surface pale green or grayish-green, occasionally with tinge of bronze, pubescent; veins distinct. Flowers nearly fertile; stamens upright.

Fruit ripens early but later than Moore Early, keeps well. Clusters large to medium, long, slender to medium, cylindrical to slightly tapering, usually single-shouldered, loose to medium but more compact than Isabella. Berries large to medium, distinctly oval, often pear-shaped, dull black, covered with a moderate amount of blue bloom, persistent, rather soft. Skin medium to thick, intermediate in toughness, contains some red pigment. Flesh pale green, juicy, somewhat tender, slightly coarse, vinous, sweet next the skin to acid at center, good in quality. Seeds numerous, separate rather easily from the pulp, inclined to large, of medium length, broad, notched, plump, dark brown; raphe buried in a groove of average width; chalaza large, above center, circular to slightly oval, somewhat obscure.

ISRAELLA.

(Labrusca, Vinifera?)

1. *Horticulturist*, 18:313, 314. 1863. 2. Grant, *Descript. Cat.*, 1864:5, 8, 18, 19, 21, 32. 3. Grant, *Grape Vines*, 1864: 1, 2, 13. 4. *Mag. Hort.*, 33:70, 148, 337. 1867. 5. Fuller, 1867:225. 6. *Am. Pom. Soc. Cat.*, 1867:44. 7. *Mag. Hort.*, 34:6, 103, 138, 140, 309, 350. 1868. 8. *Grape Cult.*, 1:42, 116, 262, 302, 326. 1869. 9. *Am. Pom. Soc. Rpt.*, 1881:40. 10. *Bush. Cat.*, 1883:111. 11. *Tex. Sta. Bul.*, 48:1150, 1158. 1898. 12. *Ga. Sta. Bul.*, 53:45. 1901.

Israella came from Dr. C. W. Grant contemporaneously with Iona, and was heralded far and wide as the earliest good grape in cultivation. For several years after its introduction it was widely tried and almost everywhere discarded because of the poor quality and unattractive appear-

ance of the fruit and lack of vigor, hardiness and productiveness of the vine.

Dr. Grant grew the Israella from seed of Isabella planted in 1855. In 1859 or 1860, Peter B. Mead, then editor of the *Horticulturist*, selected this variety from several thousand seedlings of the same parentage and named it in honor of Dr. Grant's wife. The first fruit was borne in 1859. It was placed on the grape list of the American Pomological Society fruit catalog in 1867 and was dropped from their list in 1881. It has been gradually dropped from cultivation although it is still to be found in many varietal vineyards and is listed for sale by an occasional nurseryman.

Vine intermediate in vigor, usually hardy, hardly productive. Canes of average length, not numerous, slender, medium to dark brown; tendrils continuous, bifid. Leaves large to medium, intermediate in thickness; upper surface light green, dull, medium to rugose; lower surface pale green to grayish-green, faintly pubescent. Stamens upright.

Fruit ripens a little later than Concord, appears to keep well. Clusters above average size, intermediate in length and breadth, strongly tapering, often single-shouldered, usually compact, frequently with many abortive fruits. Berries small to medium, roundish to oval, black or purplish-black, not glossy, covered with a fair amount of bloom, inclined to drop somewhat from the pedicel, not firm. Skin thick, tough, contains a large amount of purplish-red pigment. Flesh pale green, juicy, tender, stringy, mild, sweet from skin to center, appears to lack character, not so good in flavor or quality as Concord, ranks no more than fair in quality. Seeds separate easily from the pulp, medium to below in size, intermediate in length, broad to medium, decidedly notched, blunt, light brown, seed-coat often covered with numerous grayish warts; raphe buried in a shallow, wide groove; chalaza small, at center or above, irregularly circular, obscure.

IVES.

(Labrusca, Aestivalis?)

1. *U. S. Pat. Off. Rpt.*, 1856:433. 2. *Am. Pom. Soc. Rpt.*, 1858:176. 3. *Horticulturist*, 21:327. 1866. 4. *Grape Cult.*, 1:10, 12, 42, 80, 116. 1869. 5. *Am. Pom. Soc. Cat.*, 1869:42. 6. *Grape Cult.*, 2:171, *fig.*, 172, 297. 1870. 7. *Mich. Pom. Soc. Rpt.*, 1875:403. *fig.* 8. *Bush. Cat.*, 1883:111, 112. *fig.* 9. *Am. Pom. Soc. Rpt.*, 22:166. 1889. 10. *Ala. Sta. Bul.*, 10:10. 1890. 11. *Va. Sta. Bul.*, 30:100, 108. 1893. 12. *Mo. Sta. Bul.*, 46:39, 42, 45, 46, 54, 76. 1899. 13. *Ga. Sta. Bul.*, 28:289, 291. 1895. 14. *Tenn. Sta. Bul.*, Vol. 9:182. 1896. 15. *Traité gen. de vit.*, 6:183. 1903.

Ives' Madeira (6, 8, 15). *Ives' Madeira Seedling* (3). *Ives' Seedling* (1, 3, 4, 7). *Ives' Seedling* (6, 8, 14, 15). *Ives' Seedling Madeira* (15). *Kittredge* (3, 6, 8, 15).

A number of years ago Ives attained a high reputation as a grape for the making of red wines and was held to be surpassed only by Norton for

IVES

this purpose. It is hardy, healthy, vigorous, and fruitful, but poor in quality as a table grape, not ranking above Hartford, with which it sometimes competes in the market though wrongfully, as it is a much later grape. Ives colors long before it is ripe and is often sent to market before sufficiently matured, at which stage of development it is barely edible. Even when ripe it has a foxy odor objectionable to nearly all; moreover, its flesh is tough and pulpy. The bunches are compact with well-formed, jet-black grapes, which make it an attractive fruit. It is easily propagated and is adapted to any good grape soil. It is so rampant in growth that it is difficult to manage in the vineyard. The good characters of the vine, as well as one or two of the fruit, indicate that Ives might be desirable for breeding purposes, but its special value is for the making of red wines of the claret type, in which it is said to have a fine red color but a foxy taste and odor which, however, improve with age. Ives is hardly as widely grown as formerly, having been most popular at the time when the Catawba along the Ohio River was succumbing to fungal diseases and a more healthy and productive grape was wanted. It has never been very largely grown elsewhere.

Ives was grown by Henry Ives from seed planted in 1840 in his garden in Cincinnati, Ohio. It was exhibited in 1844 before the Cincinnati Horticultural Society. Ives insisted that it came from seed of Madeira grapes which had been sent him from abroad. As the variety is evidently largely, if not wholly Labrusca, it has always been supposed that his Madeira seedlings became accidentally mixed with a chance seedling. Because of some of its characters the parentage of Ives has been variously credited to Isabella, Alexander, Hartford and others, but nothing is positively known as to this phase of its origin. It was placed on the grape list in the American Pomological Society fruit catalog in 1869 where it is still retained. Ives was awarded in 1868 the premium offered by the Longworth Wine House of Cincinnati for the best wine grape for the United States. It is still cultivated to a considerable extent although not nearly so popular as forty years ago.

Vine vigorous, hardy, healthy, productive to very productive. Canes long to medium, of average number, thick, dark brown to reddish-brown, surface covered with thin blue bloom; nodes enlarged, slightly flattened; internodes short; diaphragm thick;

pith medium to below in size; shoots pubescent; tendrils continuous, of average length, bifid to trifid.

Leaf-buds medium to large, short, thick, obtuse to conical, sometimes strongly compressed. Leaves large to medium, of average thickness; upper surface dark green, dull, medium to slightly rugose; lower surface very pale green, pubescent; veins distinct; lobes three to five when present, with terminal lobe acute to acuminate; petiolar sinus deep, narrow, sometimes closed and overlapping; basal sinus shallow, medium in width; lateral sinus of average depth, rather narrow; teeth shallow to medium, intermediate in width. Stamens upright.

Fruit ripens about with Concord or slightly later, keeps well. Clusters of fair size, intermediate in length and breadth, tapering to nearly cylindrical, three or four bunches per shoot, frequently single-shouldered, compact to medium, often with numerous abortive berries; peduncle long to medium, of average thickness; pedicel above medium in length, slender, covered with numerous, small warts; brush short, slender, pale green with reddish-brown tinge. Berries intermediate in size, oval to roundish, jet-black, covered with a moderate amount of blue bloom, very persistent, firm. Skin of medium thickness, tough, adheres slightly to the pulp, contains a fair amount of wine-colored pigment, slightly astringent. Flesh pale green, translucent, juicy, fine-grained, very tough, foxy, sweet at skin to tart at center, hardly good in quality. Seeds separate with difficulty from the pulp, one to four, average three, below medium to small, often abortive, medium to broad, rather short, usually blunt and plump, brownish; raphe obscure; chalaza a small circular depression, nearly central, usually obscure. Must 808.

JAEGER.

(Lincecumii, Bourquiniana.)

1. *Ia. Hort. Soc. Rpt.*, **1890**:117. 2. *Va. Sta. Bul.*, **30**:107. 1893. 3. *Bush. Cat.*, **1894**:137, *fig.*, 138. 4. *Rural N. Y.*, **55**:591. 1896. 5. *Ark. Sta. Bul.*, **39**:31. 1896. 8. *Am. Pom. Soc. Cat.*, **1897**:20. 7. *Tex. Sta. Bul.*, **48**:1150, 1158. 1898. 8. *Mo. Sta. Bul.*, **46**:39, 43, 45, 76. 1899. 9. *Tex. Sta. Bul.*, **56**:277. 1899. 10. *Ala. Sta. Bul.*, **110**:83. 1900.

Hermann Jaeger (1, 2, 3, 4, 5, 7, 9, 10). *Jaeger* (3). Jaeger, *Hermann* (6). *Munson No. 81* (2).

Jaeger is a large-clustered, small-berried grape from Munson of Texas.[1] It is said to be very successful in the South and Southwest both as a table and a wine grape. Its meritorious qualities are vigorous, productive vines

[1] In 1889 Munson sent out a grape under the name Jaeger and in 1890 he introduced the variety here described under the name Hermann Jaeger, at the same time withdrawing the former variety from further dissemination. As the first named Jaeger is apparently obsolete there seems to be no objection to shortening the name so as to conform in nomenclature with the recommendations of the American Pomological Society.

JAMES

with foliage free from mildew and rot, and well-flavored, tender-fleshed berries with thin tough skins. It requires too long a season for maturity for successful cultivation in New York.

Munson grew Jaeger from seed of a selected wild Post-oak vine pollinated by Herbemont. The seed was planted in 1885 and the variety was introduced by the originator in 1890. The culture of Jaeger seems to be slowly spreading. It was placed on the grape list of the American Pomological Society fruit catalog in 1897 and is still retained there.

Vine vigorous, doubtfully hardy, an uncertain bearer in New York on account of winter injury but yielding good crops farther south. Canes variable in length, intermediate in number and thickness, covered with considerable blue bloom; tendrils intermittent, bifid to trifid. Leaves large, not uniform in color; lower surface grayish-green, slightly pubescent; stamens upright. Fruit ripens soon after Concord, matures evenly, keeps and ships well. Clusters medium to large, frequently single-shouldered, strongly compact. Berries below medium to small, roundish, frequently compressed on account of compactness of cluster, attractive black, covered with abundant blue bloom, persistent. Skin thin, tough. Flesh medium juicy, fine-grained, tender, spicy, somewhat tart from skin to center, good in quality. Seeds separate very easily from the pulp, not numerous, long, intermediate in size, sometimes with enlarged neck.

JAMES.

(Rotundifolia.)

1. *Am. Pom. Soc. Rpt.*, 1889:136. 2. *Bush. Cat.*, 1894:178. 3. *Am. Pom. Soc. Cat.*, 1899:30. 4. *Ga. Sta. Bul.*, 53:45. 1901. 5. *N. C. Sta. Bul.*, 187:61. 1903. 6. *S. C. Sta. Bul.*, 132:16, 18. 1907.

James is the only variety of Rotundifolia possible to illustrate in this work. The accompanying color-plate, while not wholly satisfactory, yet shows characteristic fruit and foliage somewhat reduced in size. James is one of the largest of the Rotundifolia grapes and probably the best general purpose variety of this species. It cannot be grown north of Maryland.

The variety was originated by J. Van Lindley of Pitt County, North Carolina. It was introduced about 1890 and was placed on the grape list of the American Pomological Society fruit catalog in 1899. It is not known in the North but is cultivated more or less throughout the habitat of *Vitis rotundifolia* in the South.

The following description of the variety is a compilation:

Vine vigorous, healthy, productive. Flowers open very late; stamens reflexed. Fruit ripens late, hangs on the vines for three weeks, keeps well. Clusters small, containing from four to twelve berries, irregular, loose. Berries large, three-fourths to one and one-quarter inches in diameter, roundish, black or blue-black. Skin very thin. Pulp juicy, sweet, good to best in quality.

JANESVILLE.

(Labrusca, Riparia.)

1. *Rec. of Hort.*, 1868:45. 2. *Horticulturist*, 24:52, 203. 1869. *fig.* 3. *Montreal Hort. Soc. Rpt.*, 1879:65. 4. *Wis. Hort. Soc. Rpt.*, 1881–2:141. 5. *Am. Pom. Soc. Cat.*, 1883:26. 6. *Rural N. Y.*, 45:622. 1886. 7. *Wis. Sta. An. Rpt.*, 5:161. 1888. 8. *Mass. Hatch Sta. Bul.*, 2:20. 1888. 9. *Wis. Hort. Soc. Rpt.*, 1889:117. 10. *N. Y. Sta. An. Rpt.*, 10:496. 1891. 11. *Bush. Cat.*, 1894:143. 12. *Del. Sta. An. Rpt.*, 7:135, 138. 1895. 13. *N. Y. Sta. An. Rpt.*, 17:531, 545, 547, 555. 1898.

Endowed with a constitution which enables it to withstand a degree of cold to which most other varieties of grapes would succumb, Janesville has made a place for itself in far northern localities. Moreover, it ripens very early, being one of the first to color though not ripe until some time after fully colored; and earliness is another requisite for a northern location. The vine, too, is generally healthy, vigorous and productive. But the fruit is worthless where better sorts can be grown. The clusters and berries are small, or of only medium size, while the grapes are pulpy, tough, seedy, with a thick skin and a disagreeable acid taste. Janesville has so many good vine characters that it may be of value for breeding purposes. It is fit for cultivation only in northern localities where better grapes cannot be grown or where fruit for a cheap red wine is wanted.

Janesville was grown by F. W. Loudon, of Janesville, Wisconsin, from seed secured at the Rock County Fair in 1858. It fruited for the first time in 1861 and was introduced several years later by C. H. Greenman of Milton, Wisconsin, who had bought the variety from the originator for $1000. It was named by the Wisconsin Horticultural Society in 1868. Janesville was placed on the grape list in the American Pomological Society fruit catalog in 1883 and is still retained. It is said by many to be a cross of Hartford and Clinton but this is a surmise and nothing is positively known as to its parentage. Its botanical characters are plainly those of a Labrusca-Riparia cross but with what admixture of the two species cannot be told. The early blooming season, and sometimes intermittent

JANESVILLE

tendrils, indicate *Vitis riparia*, while foliage and fruit show both this species and *Vitis labrusca*.

Vine vigorous to very vigorous, healthy, hardy, productive to very productive. Canes spiny, intermediate in length, numerous, medium to below in size, dark brown; nodes flattened; internodes long to medium; diaphragm thick; pith intermediate in size; shoots thinly pubescent; tendrils intermittent to continuous, long, bifid to trifid.

Leaf-buds medium to below in size, short, thick, conical, prominent, open early. Young leaves tinged on under side and faintly along margin of upper side with rose carmine. Leaves small to medium, somewhat thin; upper surface variable in color, glossy and smooth; lower surface pale green, slightly pubescent; veins indistinct; leaf usually not lobed with terminus acute; petiolar sinus intermediate in depth, narrow, often closed and overlapping; basal and lateral sinuses lacking; teeth shallow, of average width. Flowers fertile, open very early; stamens upright.

Fruit ripens slightly earlier than Concord although it colors much earlier, keeps well. Clusters medium to small, short, of average breadth, cylindrical to tapering, usually single-shouldered, compact; peduncle short, slender; pedicel short, slender, covered with small scattering warts; brush dark wine color. Berries intermediate in size, roundish to slightly oval, dull black, covered with rather heavy blue bloom, usually persistent, firm. Skin thick, medium to nearly tough, adheres slightly to the pulp, contains considerable dark wine-colored pigment, astringent. Flesh pale reddish-green, translucent, juicy, very tough, rather coarse, vinous, sweet next the skin but quite acid at the center, fair in quality. Seeds adhere to the pulp, one to six, average three, above medium in size, broad, often angular, rather blunt, dark brown; raphe obscure; chalaza large, ovate, moderately distinct.

JEFFERSON.

(Labrusca, Vinifera.)

1. *Gar. Mon.*, **21**:362. 1879. 2. *Ib.*, **22**:142, 176, 191. 1880. 3. *Am. Pom. Soc. Rpt.*, **1881**:33 44. 4. Downing, **1881**:167 app. 5. *Am. Pom. Soc. Cat.*, **1881**:24. 6. *Am. Pom. Soc. Rpt.*, **1885**:83, 103, 105. 7. *Ohio Hort. Soc. Rpt.*, **1885-6**:171. 8. *Gar. and For.*, **3**:178, 290. 1890. 9. *Bush. Cat.*, **1894**:143. *fig.* 10. *N. Y. Sta. An. Rpt.*, **17**:531, 548, 552. 1898. 11. *Va. Sta. Bul.*, **94**:137. 1898. 12. *Kan. Sta. Bul.*, **110**:239. 1902.

Jefferson is the offspring of Concord crossed with Iona, resembling in vigor, productiveness and healthiness the Concord, though not equal to it; and in color and quality of fruit the Iona. It falls considerably short of being an Iona fruit on a Concord vine, however, which would have made it one of the most valuable of American grapes. The vine produces its fruit two weeks later than Concord and is not nearly as hardy, faults that debar it from taking high rank as a commercial grape in New York. In

its botanical characters and in immunity from diseases it is almost identical with Concord. Fortunately the vines yield readily to "laying down" for winter protection so that even in commercial plantations it is not difficult to cover the vines and so prevent winter injury.

The fruit of Jefferson is handsomer than that of Iona and of almost equal quality. The accompanying color-plate shows the large, well-formed, compact bunch, with berries of uniform size and color, which, taken together, make it one of the most attractive of red grapes. The flesh is firm, yet tender and juicy with a rich, vinous flavor and a delicate aroma which persists even after the berries have dried into raisins. The fruit ships and keeps well, the berries adhering to the cluster and the fruit retaining its freshness into late winter. The vine characters, with the exceptions of late bearing and tenderness to cold, are in the main good.

Jefferson is widely distributed and is well known by viticulturists in eastern America. It is not particular as to localities, if the season be long and the climate temperate, and thrives in nearly all grape soils though it does not flourish in a soil strongly impregnated with lime. This variety is deserving greater recognition as a commercial grape than it now receives. In a discriminating market it should command a sufficiently high price to make it a profitable variety to grow in this State despite its need of protection. Few grapes, and probably no red grape, are more desirable inhabitants of the garden than Jefferson; it not only furnishes an abundance of the best long-keeping fruit, but is also very ornamental throughout the season.

This variety is one of J. H. Ricketts'[1] grapes from seed of Concord

[1] James H. Ricketts was born in Oldbridge, Middlesex County, Massachusetts, in 1830, the family moving to Indiana while Ricketts was still a child. When a young man Ricketts learned the trade of bookbinding in Cincinnati and later practiced this art in New York City. In 1857 he established a bookbinding business at Newburgh, New York; here he became interested in raising fruit, devoting to it such time as could be be spared from his business. In 1861 he started his work in grape improvement, reading all the books then published on this subject in order to prepare himself to carry on the work intelligently. His first production was Raritan which he says he thought not much improvement. In 1862, he built a glass house in order that he might have Vinifera vines for crossing with natives outside. His first production of foreign cross-breeds was the Charles Downing, now known as Downing.

Ricketts produced many hundred seedlings, and for ten or twelve years exhibited them at various fairs, horticultural society meetings and other places, where their magnificent appearance and

JEFFERSON

pollinated with Iona. It fruited for the first time in 1874 and was introduced about 1880. In 1881 it was placed on the grape list of the American Pomological Society fruit catalog and has never been removed. Of all the remarkable seedlings raised by Ricketts the Jefferson is best known and most widely disseminated. The variety won for its originator the Wilder silver medal and as grown by him seldom failed to take premiums at exhibitions where shown. It is greatly to be regretted that the variety does not have all of the characters requisite to adapt it to culture in commercial vineyards.

Vine normally vigorous, healthy, not always hardy, medium in productiveness. Canes short, numerous, about medium in thickness, light to dark brown; nodes enlarged, roundish; internodes short; diaphragm thick; pith medium to below in size; shoots heavily pubescent; tendrils intermittent, medium to short, bifid to trifid.

Leaf-buds small, short, slender, pointed to conical, open very late. Young leaves tinged on under side and along margin of upper side with rose carmine. Leaves healthy, above medium to small, of average thickness; upper surface light green, medium to rugose on older leaves; lower surface very pale green, strongly pubescent; veins distinct; leaf usually not lobed with terminus acute; petiolar sinus of mean depth, narrow to wide, sometimes closed and overlapping; basal sinus usually absent; lateral sinus shallow, often a mere notch; teeth regular, shallow, of average width. Flowers nearly fully self-fertile, open late; stamens upright.

Fruit ripens late, usually about with Catawba, keeps and ships well. Clusters large to medium, intermediate in length and width, cylindrical to slightly tapering, usually single-shouldered, but sometimes double-shouldered, medium to compact;

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fine flavor attracted universal and favorable attention and made him the recipient of many medals and prizes. Unfortunately Ricketts, like many other American grape-breeders, fell into financial difficulties, and in 1877 lost his vineyard and home by foreclosure. In 1888, he moved to Washington, D. C., to work at his trade but has again started to improve grapes and is now growing a number of new varieties which will probably be shown to the public in the near future.

Ricketts' seedlings are characterized by a large size of bunch and berry, and by high quality. Unfortunately it has been the experience of growers in nearly all grape regions that the vine characters of his varieties are not equal to those of the fruit, the vines being subject to mildew and other Vinifera weaknesses. However, Ricketts produced magnificent specimens of his grapes, year after year, under conditions which every one admits were less favorable than those of the average grape-grower. The secret of his success seems never to have been discovered. This anomaly is so striking that Campbell did not hesitate to suggest that the fault was with the American grape-grower rather than with Ricketts' grapes or the location of the vineyard. The best known of his varieties are: Advance, Bacchus, Don Juan, Downing, Eldorado, Empire State, Highland, Jefferson, Lady Washington and Secretary. Besides these he produced many others, some of which were named but many of which were known only under numbers.

peduncle short, slender; pedicel medium to short, slender, covered with a few, small, inconspicuous warts, enlarged at point of attachment to fruit; brush rather long, slender, pale yellowish-green. Berries medium in size, oval to nearly roundish, light and dark red, glossy, covered with a moderate amount of lilac bloom, persistent, very firm. Skin somewhat thick, tough, nearly free from pulp, contains no pigment, slightly astringent. Flesh light yellowish-green, translucent, very juicy, coarse-grained, tender, vinous, sweet at skin to agreeably tart at center, good to best in quality. Seeds separate easily from the pulp, one to four, average three, intermediate in size, broad, medium to short, blunt, usually plump, brownish; raphe obscure; chalaza of medium size, slightly above center, circular to pear-shaped, distinct.

JESSICA.

(Labrusca, Vinifera.)

1. *Gar. Mon.*, 24:339. 1882. 2. *W. N. Y. Hort. Soc. Rpt.*, 29:19. 1884. 3. *Can. Cen. Exp. Farms Rpt.* 1891:135. 4. *Col. Sta. Bul.*, 29:22. 1894. 5. *Bush. Cat.*, 1894:144. 6. *N. Y. Sta. An. Rpt.*, 17:531, 548, 552. 1898. 7. *Mich. Sta. Bul.*, 169:171. 1899. 8. *Ont. Fr. Exp. Stas. Rpt.*, 8:10, *fig.*, 48. 1901. 9. *Can. Hort.*, 24:447. 1901. *fig.*

Jessica is an early, hardy green grape from Canada. In flavor it is very good for so early a variety, being sweet, rich yet sprightly and almost free from foxiness. But the fruit lacks in attractiveness and keeping quality, and shells badly when overripe. The clusters and berries are small, and the color is too green and the cluster too loose for a good grape. Jessica may be commended for earliness and hardiness and is therefore desirable, if at all, in northern regions.

William H. Read of Port Dalhousie, Ontario, grew Jessica from seed planted some time between 1870 and 1880. It was introduced in 1884 by D. W. Beadle of St. Catharines, Ontario. Jessica has been quite thoroughly tested in different parts of the United States but has never become popular and is to be found only in varietal vineyards. The parentage of the variety is unknown but it is generally considered to be of mixed Labrusca and Vinifera blood, the tendrils, foliage, fruit characters and the weaknesses of the grape all showing a Vinifera hybrid.

Vine medium in vigor, usually healthy, hardy, variable in productiveness. Canes medium to long, numerous, thickish, moderately dark brown with red tinge changing to ash-gray on some canes; tendrils continuous to intermittent, bifid or trifid. Leaves small to medium, intermediate in thickness; upper surface medium to dark green, glossy, often somewhat rugose; lower surface pale green, very pubescent; veins indistinct. Flowers nearly fertile, open in mid-season; stamens upright.

JEWELL

Fruit ripens among the earliest of the white grapes, keeps only fairly well. Clusters medium to small, not long, slender, tapering, usually single-shouldered, intermediate in compactness. Berries small to medium, roundish, light green, often tinged with yellow, covered with thin grayish-white bloom, rather persistent unless overripe, moderately soft. Skin rather thin, of average toughness, adheres but slightly to the pulp, contains no pigment, faintly astringent. Flesh pale green, almost transparent, juicy, tender, soft, sprightly, sweet, good to above in flavor and quality. Seeds adhere somewhat to the pulp, about average in size and length, medium to broad, notched, brownish; raphe buried in a narrow groove; chalaza small, above center, circular, nearly distinct.

JEWEL.

(Labrusca, Bourquiniana, Vinifera.)

1. *Mo. Hort. Soc. Rpt.*, 1883:78. 2. *Ill. Hort. Soc. Rpt.*, 1885:280. 3. *Ohio Hort. Soc. Rpt.*, 1885–6:128. 4. *Kan. Hort. Soc. Rpt.*, 1886:187. 5. *Ohio Hort. Soc. Rpt.*, 1886–7:205. 6. *Rural N. Y.*, 46:607. 1887. *fig.* 7. *Am. Pom. Soc. Rpt.*, 1887:98. 8. *Ohio Hort. Soc. Rpt.*, 1888–9:107. 9. *Mo. Hort. Soc. Rpt.*, 1889:373. 10. *N. Y. Sta. An. Rpt.*, 11:627. 1893. 11. *Bush Cat.*, 1894:144. 12. *N. Y. Sta. An. Rpt.*, 17:531, 548, 555. 1898. 13. *Mo. Sta. Bul.*, 46:39, 42, 46, 51, 76. 1899.

Burr's Early (1, 2). *Burr No. 1* (4). *Jewell* (2)

Jewel has much to recommend it, yet it has been grown since 1874 without having become widely distributed or well known. Its strong characters are earliness and high quality, though as compared with Delaware, its parent, it is not lacking in vigor, health, or hardiness, the vine characters that contribute most to a desirable variety. For a grape of this parentage, it is remarkably free from fungal diseases. In form and size of bunch and berry it closely resembles Delaware but is a deep black in color. The flesh characters and flavor are much like those of Delaware, the pulp being tender, yet firm, and the flavor having the same rich, sprightly, vinous taste found in the parent, though it can hardly be said to equal the Delaware in the characters which make high quality. The seeds are few and small. The skin is thin but tough, and the fruit, considering the tenderness of the flesh, ships remarkably well. It keeps long and does not shell, and though an early grape, will hang until frost if the robins, one of the worst pests of the grape-grower, can be kept from them.

Jewel is a most excellent little grape, almost worthy the place among black grapes that Delaware has among red ones. In particular it is recommended for its earliness and for those localities to the North where

standard varieties, as Concord, do not ripen. Our list of early grapes is large, but most of them are poor in quality, while Jewel is deserving in this respect to stand well toward the head of the list.

John Burr of Leavenworth, Kansas, grew Jewel from seed of Delaware planted about 1874. The blossoms being open to cross-pollination, the male parent is unknown. It was introduced in 1887 by Stayman & Black of Leavenworth. Jewel has been quite widely tested in varietal vineyards but has never become popular and in the East, in particular, is hardly known.

Vine medium to vigorous, healthy, hardy except in exposed locations, medium to productive. Canes intermediate in length and number, slender, light to dark reddish-brown; nodes enlarged, flattened; internodes medium to short; diaphragm thickish; pith medium to below in size; shoots thinly pubescent; tendrils continuous, of average length, bifid.

Leaf-buds of medium size, short, thick, conical, open early. Young leaves heavily tinged on under side and along margin of upper side with rose-carmine. Leaves scant, intermediate in size, thick; upper surface light green, dull, medium to rugose; lower surface tinged with bronze, heavily pubescent; veins well defined; lobes three when present, with terminus acute; petiolar sinus of average depth, narrow to medium; basal sinus usually lacking; lateral sinus shallow, wide; teeth shallow, of ordinary width. Flowers sterile, open in mid-season or somewhat earlier; stamens reflexed.

Fruit ripens about with Moore Early, keeps and ships well. Clusters medium to small, slender to medium, tapering to cylindrical, single-shouldered, medium to compact; peduncle inferior in length, of average size; pedicel short to medium, slender; brush short, wine-colored. Berries medium in size, roundish to oval, dark purplish-black, dull, covered with heavy, blue bloom, persistent, moderately firm. Skin inclined to thin, tough, adheres to the pulp, contains dark, wine-colored pigment, not astringent. Flesh pale green, translucent, juicy, fine-grained, usually tender, sprightly, vinous, sweet from skin to center, not foxy, good to very good in quality. Seeds do not separate readily from the pulp, one to four, average two, intermediate in size and breadth, frequently one-sided, blunt, light brown; raphe hidden in a deep groove; chalaza small, above center, circular to oval, distinct.

KENSINGTON.

(Vinifera, Riparia, Labrusca.)

1. *Can. Cen. Exp. Farms Rpt.*, 1891:135. 2. *Bush. Cat.*, 1894:144. 3. *Can. Cen. Exp. Farms Rpt.*, 1897:63. 4. *N. Y. Sta. An. Rpt.*, 18:395. 1899.

Kensington is chiefly interesting as a cross between Riparia and Vinifera, though it has several very meritorious fruit and vine characters.

KENSINGTON

It resembles Clinton, its Riparia parent, in vigor, hardiness, growth, and productiveness of vine and in the botanical characters of vine and foliage; but the fruit has many of the characters of the European parent, Buckland Sweetwater. The grape is a handsome yellowish-green with large oval berries in a somewhat loose cluster of medium size. As it grows on the grounds of this Station, the clusters contain many undeveloped berries and are not as uniform in size and shape as might be desirable. While the quality is not equal to that of Buckland Sweetwater, it is much better than Clinton, ranking among good to best grapes. The flesh is tender and juicy, though slightly stringy, with a rich, sweet, vinous flavor. The seeds are markedly those of Vinifera. The hardiness of the vine and the high quality of the fruit should make Kensington a favorite green grape in northern gardens. It is doubtful if its good characters are sufficient in number or degree to make it of value for commercial vineyards.

This variety was produced by William Saunders of London, Ontario, from seed of Clinton pollinated by Buckland Sweetwater. It was sent out for testing sometime between 1870 and 1880 and since that time has been carefully tried at the Canadian Experiment Station and this Station, and with very favorable results. For some reason it seems not to have been very generally introduced into cultivation and nurserymen scarcely handle it though it ought to be found in gardens and in northern vineyards at least.

Vine vigorous, hardy, usually productive but sometimes an uncertain bearer, somewhat susceptible to attacks of mildew and leaf-hoppers. Canes medium to long, of average number, somewhat slender, light brown; nodes enlarged, flattened; internodes short to medium; diaphragm intermediate in thickness; pith of medium size; shoots thinly pubescent; tendrils persistent, intermittent to continuous, rather long, bifid to sometimes trifid.

Leaf-buds medium to below in size, variable in length, slender, conical to pointed, open very late. Young leaves tinged with faint rose-carmine on lower side only; upper side heavily pubescent, prevailing color pale green with faintest trace of carmine. Leaves small to medium, thin; upper surface light green, glossy, smooth to medium; lower surface pale green, pubescent, somewhat hairy; lobes none to three with terminus obtuse to acute; petiolar sinus of average depth, moderately narrow; basal sinus shallow when present; lateral sinus shallow, usually a notch; teeth deep and wide. Flowers strongly self-fertile, open medium early; stamens upright.

Fruit ripens about with Concord, does not keep very long in good condition. Clusters medium to large, intermediate in length and breadth, cylindrical to tapering, often heavily

single-shouldered, sometimes double-shouldered, loose to medium, frequently with many undeveloped berries; peduncle long to medium, slender; pedicel long and slender, covered with numerous small, inconspicuous warts, wide at point of attachment to fruit; brush short, pale green. Berries variable in size, distinctly oval, attractive green changing to yellowish-green as the fruit matures, glossy, covered with thin gray bloom, persistent, moderately firm. Skin thin, somewhat tough, adheres to the pulp, contains no pigment, faintly astringent. Flesh greenish, transparent, juicy, tender, stringy, vinous, sweet, good in quality. Seeds separate easily from the pulp when fully ripe but frequently leave some flesh attached to the seed, two to four, average three, heavily wrinkled, large and long, broad to medium, somewhat sharp pointed, yellowish-brown; raphe buried in a shallow groove; chalaza of average size, above center, very irregular in shape, rather distinct.

KING.

(Labrusca?)

1. *Ill. Hort. Soc. Rpt.*, 1905:602. 2. *Ib.*, 1906:215.

King has not fruited on the grounds of this Station, but one of the authors of this work was a committeeman from the Michigan Horticultural Society to name and describe the variety as it grew on the grounds of the originator. The following was the estimate of it made at that time:

"The King is more vigorous and prolific than the Concord, time of ripening and length of season the same, clusters are one-fourth larger, grapes are more persistent in pedicels, pulp is more tender, flavor nearly the same, but more sprightly, seeds fewer in number, wood harder and of shorter joints and the pedicels are larger."

This variety was found growing in the Concord vineyard of W. K. Munson, Grand Rapids, Michigan, in 1892. The vine was set for a Concord, and is either a bud-sport of that variety or is some other sort that became accidentally mixed with the Concord vines. Mr. Munson believes it to be the former. King is thought by some to be Eaton on account of its close resemblance to that variety but the grape-growers who have examined it, generally hold it to be distinct. It is in all respects a typical black offspring of Concord, whether superior remains to be determined. It has been widely disseminated and its place in viticulture should soon be known. In seeking the origin of the grapes described in this work, an effort has been made to determine whether any could be said with certainty to have arisen from bud-sports. King is the best authenticated bud-sport among

LADY

the grapes here listed and yet there is, as the above history shows, some doubt as to its having originated in this way.

The description of King given below was made from vines and fruit from Ellwanger & Barry's vineyards, Rochester, New York.

Vine vigorous to very vigorous, hardy, productive. Canes medium to above in length, intermediate in number and thickness, medium to dark reddish-brown; tendrils continuous to intermittent, trifid to bifid. Leaves unusually large, thick; upper surface medium green, dull, of average smoothness; lower surface grayish-white changing to slight bronze, considerably pubescent; veins fairly distinct.

Fruit ripens between Worden and Concord, appears to keep well. Clusters large to above medium, above average length, broad to medium, irregularly tapering to slightly cylindrical, usually single-shouldered, compact to medium. Berries unusually large averaging slightly below McPike in size, roundish, reddish-black to black as the fruit fully matures, covered with heavy blue bloom, persistent, firm. Skin medium to thick, tough, adheres considerably to the pulp, contains a moderate amount of reddish pigment, astringent. Flesh pale green, very juicy, somewhat tough, stringy and with some foxiness, sweet at skin to agreeably tart at center, good in quality. Seeds adherent, not numerous, above average in size, short, broad, slightly notched if at all, blunt to medium, plump, light brown; raphe hidden in a shallow groove; chalaza large, at center or above, obscure.

LADY.

(Labrusca, Vinifera.)

1. *Horticulturist*, 29:48. 1874. 2. *Ib.*, 30:84, *fig.*, 367. 1875. 3. *Mich. Pom. Soc. Rpt.*, 1875:295, 411. *fig.* 4. *Am. Pom. Soc. Rpt.*, 18:40, 135, 136, 143, 162. 1881. 5. *Am. Pom. Soc. Cat.*, 1881:24. 6. *N. J. Hort. Soc. Rpt.*, 1881:12. 7. *Bush. Cat.*, 1883:114. 8. *Ill. Hort. Soc. Rpt.*, 1883:81. 10. *Rural N. Y.*, 45:234, 622. 1886. 12. *Gar. and For.*, 3:178, 214, 490, 599. 1890. 13. *Ill. Sta. Bul.*, 28:264. 1893. 14. *N. Y. Sta. An. Rpt.*, 17:532, 548, 552. 1898.

Lady is generally accredited with being the highest in quality of all the seedlings of Concord and, added to its high quality, it is early, fairly vigorous, hardy, and nearly as free from fungal diseases as its parent. It is not, however, without faults, one of which, a thin, tender skin which cracks badly, wholly debars it from ever making a commercial variety for other than nearby markets. The vine is much like that of Concord, though not as vigorous nor as productive, but ripening its fruit fully two weeks earlier. The fruit is much superior to Concord in quality, being richer, sweeter, and having less foxiness. It hangs on the vines well but deteriorates rapidly after picking. The term "ironclad" used by grape-growers to express hardiness and freedom from diseases, is probably as

applicable to Lady as to any other of our Labrusca grapes. The foliage is dense and of a deep glossy green color, neither scalding under a hot sun, nor freezing until heavy frosts, making it an attractive ornament in the garden. It is deservedly popular as an amateur grape and should be planted more for nearby markets. It may be expected to succeed wherever Concord is grown, and because of its early ripening is especially adapted to northern latitudes where Concord does not always mature. Though it ripens early it starts its buds late and blossoms late, thereby often escaping late spring frosts.

When Lady was first heard of, it was in the hands of a Mr. Imlay of Muskingum County, Ohio. He had received it as a premium from an agricultural paper with others, all represented to be pure Concord seedlings. This was during the Civil War. Later the variety was sold to George W. Campbell of Delaware, Ohio, who introduced it in 1874. Lady was placed on the grape list of the American Pomological Society fruit catalog in 1881 where it is still retained. The Lady is another example of a green seedling of Concord which excels its parent in quality. Among several of such seedlings, this variety is one of the highest in quality.

Vine weak to moderately vigorous, hardy, medium in productiveness, healthy. Canes short, medium in number, slender, dark reddish-brown; nodes of fair size, flattened; internodes short; diaphragm thick; pith intermediate in size; shoots pubescent; tendrils intermittent, of average length, bifid to trifid.

Leaf-buds small, short, pointed to conical. Leaves medium to below in size, of average thickness; upper surface light green, glossy, medium to somewhat rugose; lower surface pale green; pubescent; veins rather indistinct; lobes none to five, with terminal lobe acuminate; petiolar sinus shallow to medium, wide; basal sinus of average width; lateral sinus variable in depth and width; teeth medium to shallow, intermediate in width. Flowers fertile, open in mid-season; stamens upright.

Fruit ripens with Winchell, does not keep well. Clusters not uniform, small to above medium, short, slender, cylindrical, sometimes single-shouldered, compact to straggling; peduncle medium to short, of average size; pedicel intermediate in length, thick and smooth, wide at point of attachment to fruit; brush slender, long, greenish-white. Berries variable in size, large to below medium, roundish, light green, often with tinge of yellow, glossy, covered with thin gray bloom, persistent, firm. Skin covered with small, scattering, dark dots, inclined to crack, thin, tender, adheres slightly to the pulp, contains no pigment, slightly astringent. Flesh greenish-white, translucent, juicy, tender, aromatic, agreeably sweet from skin to center, very good in quality. Seeds

LADY WASHINGTON

separate from the pulp rather easily, few in number, intermediate in size and length, medium to broad, blunt, light brown; raphe obscure; chalaza large, above center, circular to oval, not distinct.

LADY WASHINGTON.

(Labrusca, Vinifera.)

1. *Gar. Mon.*, **19**:336. 1877. 2. *Ib.*, **20**:47. 1878. 3. *Ib.*, **21**:147. 1879. 4. *Am. Pom. Soc. Rpt.*, **1881**:33, 46. 5. *Am. Pom. Soc. Cat.*, **1881**:24. 6. *Gar. Mon.*, **26**:14, 334. 1884. 7. *N. Y. Sta. An. Rpt.*, **5**:167. 168. 1886. 8. *Ib.*, **9**:331. 1890. 9. *Ala. Sta. Bul.*, **10**:11. 1890. 10. *Kan. Sta. Bul.*, **28**:164. 1891. 11. *Col. Sta. Bul.*, **29**:22. 1894. 12. *Bush. Cat.*, **1894**:147. 13. *N. Y. Sta. An. Rpt.*, **17**:532, 541, 544, 545, 547, 552. 1898.

Were there not so many really fine green grapes, and were they sought for by grape-buyers, more might be said commendatory of Lady Washington. It is in many respects a most excellent grape but it falls short in quality for a green grape and does not excel greatly in vine characters; it cannot therefore be highly recommended to grape-growers except to give variety in the vineyard and for locations where it does preeminently well. The fruit makes an excellent appearance, keeps well and ships well, and is fairly tender, juicy and sweet, with a delicate aroma. The vine is very luxuriant,—too much so,—hardy for a grape with Vinifera blood, and healthy, though slightly susceptible to mildew. As an exhibition grape few green varieties show better when grown with all possible care and in a favorable location, for the variety is somewhat capricious as to soils and locations. It appears to be a desirable variety for home use. In the West and Southwest it is said to succeed better than most others of Ricketts' grapes.

Lady Washington is another of J. H. Ricketts' fine seedlings, this variety having come from seed of Concord fertilized by Allen's Hybrid. It was introduced in 1878, placed on the grape list of the American Pomological Society fruit catalog in 1881, and is still retained there. The vine characters of Lady Washington are mostly those of *Vitis labrusca* but the fruit plainly shows the admixture of Vinifera.

Vine usually more vigorous than Concord, sometimes sustains winter injury, productive, susceptible to mildew. Canes long, few, thick, moderately dark brown; nodes greatly enlarged, variable in shape; internodes medium to long; diaphragm thick; pith large to medium; shoots strongly pubescent; tendrils continuous, long, bifid to trifid.

Leaf-buds large to medium, short, thick, open late. Young leaves lightly tinged on under side and along margin of upper side with light rose-carmine. Leaves medium to large, rather thick; upper surface dark green, older leaves strongly rugose, glossy;

lower surface pale green, strongly pubescent; veins distinct; leaf not lobed, with terminus acute; petiolar sinus medium to deep, narrow, frequently closed and overlapping; basal sinus usually none; lateral sinus shallow, often a mere notch; teeth shallow to medium, rather narrow. Flowers fully self-fertile, open in mid-season; stamens upright.

Fruit ripens after mid-season, keeps and ships well. Clusters large to medium, broad to medium, irregularly cylindrical, single-shouldered to frequently double-shouldered, loose to medium; peduncle long, slender to medium; pedicel inclined to short, not thick, covered with numerous conspicuous warts, distinctly enlarged at point of attachment to fruit; brush very short, greenish. Berries variable in size, roundish to oblate, dark green changing to yellowish-amber, glossy, covered with thin gray bloom, persistent, of medium firmness. Skin thin, tender, adheres considerably to the pulp, contains no pigment, not astringent. Flesh pale green, transparent, juicy and tender, somewhat stringy, aromatic, sweet, ranks above Concord in quality. Seeds separate fairly well from the pulp, one to four, average three, intermediate in size and length, broad to medium, brown with yellowish tinge; raphe obscure; chalaza intermediate in size, above center, irregularly circular, obscure.

LENOIR.

(Bourquiniana.)

1. *Amer. Farmer*, 11:237, 412. 1829–30. 2. Downing, 1845:256. 3. *U. S. Pat. Off. Rpt.*, 1847:469. 4. *Horticulturist*, 12:460. 1857. 5. *Ib.*, 14:487. 1859. 6. *U. S. Pat. Off. Rpt.*, 1859:35. 7. *Gar. Mon.*, 5:74. 1863. 8. *Ib.*, 5:73. 1863. 9. Fuller, 1867:226. 10. *U. S. D. A. Rpt.*, 1887:652. 11. *Am. Pom. Soc. Cat.*, 1889:24. 12. *Bush. Cat.*, 1894:148. *fig.* 13. Husmann, 1895:83, 183. 14. Ib., 1895:121, 122. 15. *Tex. Farm and Ranch*, Feb. 8, 1896:10, 11. 16. *Tex. Sta. Bul.*, 48: 1150, 1159. 1898. 17. *U. S. D. A. Yr. Bk.*, 1898:557. 18. *Kan. Sta. Bul.*, 110:246. 1902. 19. *Traité gen. de vit.*, 6:374. 1903.

Alabama (19). *Archer?* (8). *Black Souvignon* (7) but incorr. *Black El Paso* (15). *Black July* (7). *Black Lenoir* (19). Black Spanish (14). *Black Spanish* (8, 12, 15, 19). *Blue French* (15, 19). *Blue Grape* of the South (7). *Burgundy* (12, 15, 19). *Cigar Box Grape* (19). *Clarence* (?2, 7). *Devereaux* of "Gardening for the South" (4). *Devereaux* (19). *Devereux* (5, 7, ?9). *Early Black* (4). El Paso (6). *El Paso* (12, 19). *Harris?* (7, 9). Jack (8). *Jack* (12, 15, 19). *Jacques* (12, 15, 16, 19). Jacquez (19). *Jacquez* (15). *Jac* (19). *Jacquet* (19). *July Sherry* (4). *Lenoir* (14, 19). *Long?* (9). *Longworth's Ohio* (19). *Louisville Seedling?* (9). *MacCandless* (19). *Ohio* (8 19). *Ohio Cigar Box?* (9). *Oldhouse?* (7). *Pungo* of N. C.? (7). *Segar Box* (8, 19). *Sherry of the South* (7). *Springstein* (7). *St. Genevieve?* (9). *Sumpter* (?2, 4, 7). *Thurmond* (4, 5, 7, ?9). *Warren* (8). *Wylie?* (9).

Lenoir is a southern grape, too tender and too late in ripening for even the Middle States. This variety has been largely used in France, both as a resistant stock and as a direct producer, but for some years has been losing favor for either purpose. It has also been grown more or less in California as a resistant stock. It is highly valued for its dark red wine, is considered a very good table grape, is very resistant to phylloxera, and withstands drouths well.

The origin of Lenoir is unknown. It was in cultivation in the South as long ago as the early part of the last century. Nicholas Herbemont[1] states in 1829 that its name was given it from a man named Lenoir who cultivated it near Stateburg, South Carolina, in the vicinity of the Santee River. There are traditions of its being imported from Europe, of its being found by Lenoir alongside a hedge, and so on, but none of them seem in any way authoritative. All that can be said is that Lenoir originated probably in one of the Carolinas or Georgia some time in the Eighteenth Century. This variety was tried at an early day in the northern and middle states, by Longworth at Cincinnati, by the Germans in Missouri, and in other places. On account of its being only semi-hardy and somewhat susceptible to rot, its cultivation was soon abandoned. It was early introduced into Texas and cultivated in the vicinity of El Paso, from which it derived one of its synonyms. It was placed on the grape list of the American Pomological Society fruit catalog in 1889 and it still retained. Lenoir differs from Herbemont, with which it is often confused, in having wood of a darker color, larger and darker leaves and slight differences in the fruit.

The following description is taken from various accounts of the variety:

Vine vigorous, thrifty, semi-hardy, usually quite productive. Canes rather numerous with some bloom at the nodes; tendrils intermittent. Leaves from two to seven-lobed, usually five, and of a characteristic bluish-green color above and a more pale green below. Clusters quite variable, medium to very large, tapering, usually shouldered. Berries small to medium, round, of a dark bluish-purple, nearly black, with lilac bloom. Skin rather thick, tough. Flesh slightly juicy, tender, subacidly sweet, very rich in coloring matter.

LINDLEY.

(Labrusca, Vinifera.)

1. *U. S. D. A. Rpt.*, 1862:215. 2. *Am. Pom. Soc. Cat.*, 1867:44. 3. *Horticulturist*, 24:126, 312. 1869. 4. *Mich. Hort. Soc. Rpt.*, 1881:221. 5. *Am. Pom. Soc. Rpt.*, 1881:40. 6. *Mo. Hort. Soc. Rpt.*, 1882:75. 7. *Bush. Cat.*, 1883:117. *fig.* 8. *Gar. and For.*, 5:547. 1892. 9. *N. Y. Sta. An. Rpt.*, 9:329. 1890. 10. *Ill. Sta. Bul.*, 28:260. 1893. 11. *Can. Hort.*, 17:254, 405. 1894. 12. *Va. Sta. Bul.*, 94:137. 1898. 13. *N. Y. Sta. An. Rpt.*, 17:532, 541, 543, 545, 546, 548, 552, 558. 1898. 14. *Miss. Sta. Bul.*, 56:15. 1899. 15. *Mich. Sta. Bul.*, 169:172. 1899. 16. *Tex. Sta. Bul.*, 56:223, 271. 1900. 17. *Can. Hort.*, 26:51, 96, 298, *fig.*, 299. 1903.

ROGERS' No. 9 (1, 2). *Rogers' No. 9* (3, 7, 9, 11, 17).

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[1] *Amer. Farmer*, 11:237, 412. 1829–30.

To Lindley, less productive than several others of its class, but when cross-fertilized usually bearing a crop of excellent grapes, is due much of the popularity of Rogers' hybrids. By common consent it is the best of the red grapes originated by Rogers in his crosses between Labrusca and Vinifera. Unfortunately the color-plate does not do the variety justice. Both berry and bunch should be shown a little larger, even for average-sized specimens.

When well grown Lindley is a very handsome grape. The bunches are of only medium size and are somewhat loose but the berries are well-formed, of uniform size, and of an attractive dark red color. The flesh is firm, fine-grained, juicy and tender without pulpiness and with a peculiarly rich aromatic flavor. The skin is thick and rather tough but is not objectionable in fully ripe fruit. The fruit keeps well and ships well and the berries neither crack nor shatter. The vine is vigorous, comparatively hardy for a Vinifera hybrid, fairly healthy, but as with most of its kind, susceptible to mildew. The chief defects of Lindley are its self-sterility and precariousness in bearing, and its lack of adaptation to many soils. Lindley has long been a favorite grape in the garden and should continue to be such, and might well be grown in commercial plantations as a fancy product.

For an account of the origin and parentage of Lindley see "Rogers' Hybrids." *Rogers' No. 9*, or Lindley, is first mentioned separately from the others of Rogers' hybrids about 1862. In 1869 Rogers gave this grape the name Lindley in honor of John Lindley, the English botanist. The variety has been used by a number of breeders, Munson in particular, as a parent for improved pure-bred or cross-bred offspring. Lindley was placed on the American Pomological Society fruit catalog list in 1867 and has not been removed.

Vine vigorous to rank, usually hardy but sometimes injured in exposed locations, not a heavy yielder, somewhat susceptible to mildew, often subject to attacks of leaf-hoppers. Canes very long, intermediate in number, of medium thickness, dark reddish-brown, covered with thin blue bloom; nodes enlarged, usually flattened; internodes medium to long, thick; pith of medium size; shoots pubescent; tendrils continuous, medium to long, bifid to trifid.

Leaf-buds large, of average length, above medium in thickness, obtuse to conical, open in mid-season. Young leaves heavily tinged on upper and under sides with

LINDLEY

mahogany-red. Leaves medium to large, thickish; upper surface light green, dull, slightly rugose; lower surface grayish-white, pubescent; obscurely three-lobed with terminus acute; petiolar sinus deep, narrow, often closed and overlapping; teeth shallow, intermediate in width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit ripens in mid-season, keeps and ships well. Clusters medium in size, long, inclined to broad, tapering to nearly cylindrical, frequently single-shouldered, the shoulder being connected to the bunch by a rather long stem, somewhat loose; peduncle medium to long, thick; pedicel short to medium, slender, nearly smooth, strongly enlarged at point of attachment to fruit; brush short, stubby, pale green. Berries large to medium, roundish to slightly oval, dark brick-red, covered with lilac or faint blue bloom, do not usually drop from the pedicel, of average firmness. Skin variable in thickness, tough, adheres considerably to the pulp, contains no pigment, strongly astringent. Flesh very pale green, translucent, juicy, fine-grained, nearly tender, vinous, sweet at skin to tart at center, good to best in quality. Seeds do not separate easily from the pulp unless fully ripe, two to five, average three, intermediate in size and length, distinctly notched, brownish; raphe buried in a deep, broad groove; chalaza small, nearly central, oval to pear-shaped. Must 86°.

LOUISIANA.

(Bourquiniana.)

1. Husmann, **1866**:110. 2. *Am. Jour. Hort.*, **3**:301. 1868. 3. *Grape Cult.*, **1**:22, 42, 100, 244, 326. 1869. 4. *Bush. Cat.*, **1883**:118. 5. Husmann, **1895**:183. 6. *Texas Farm and Ranch*, Feb. 8, **1896**:10, 11. 7. *Ga. Sta. Bul.*, **53**:46. 1901.

Amoreaux (6). *Burgunder* (1). *Clevener?* (6). *Red Elben* (6). *Rulander* (6). *St. Genevieve* (6). (N. B. Reference number 6 is to a red grape. Louisiana is black.)

The grape here discussed is of cultural value in the South and is of interest from the standpoint of grape-breeding and, historically, to northern grape-growers. Louisiana first came to notice in Missouri. It was received about 1860 or before by Frederick Muench of Marthasville, Warren County, Missouri, from a Mr. Theard of New Orleans, Louisiana, under the name White and Red Burgundy. Both supposed varieties proved to be alike. Theard informed Muench that the varieties had been imported from France about the first of the century by his (Theard's) father. There has been much difference of opinion as to whether this imputed origin is correct or not. Munson classes it with the Devereaux section of the Bourquiniana. It is undoubtedly closely related to Herbemont, Lenoir, and others of that class.

The variety has been much confused with Rulander and some are of

the opinion that the two varieties are identical. Those who cultivated it earliest and most extensively were, however, of the opinion that they were very similar but distinct. The vine is too tender in the North for cultivation and there are complaints from some sections in the South of the fruit rotting badly.

The following description is taken from various sources:

Vine very vigorous, stocky, short-jointed; leaves cordate, not lobed. Cluster medium to small, shouldered, compact. Berry small, round, black with blue bloom, without pulp, juicy, spicy, sweet.

LUCILE.

(Labrusca.)

1. *N. Y. Sta. An. Rpt.*, 18:395. 1899. 2. *Rural N. Y.*, 60:167. 1901. 3. *Ga. Sta. Bul.*, 53:46. 1901. 4. Budd-Hansen, 2:384. 1902.

Lucile is of interest and of value because of its truly remarkable vine characters. In vigor, health, hardiness and productiveness it is not surpassed by any of the cultivated native grapes. It is probably a seedling of Wyoming but the vine is much more vigorous than even that variety, which is considered a very strong grower. Yet with all of its great growth Lucile ripens its wood almost perfectly. It is very productive, as much so as any other of our native grapes, often bearing four bunches to the shoot, its crops exceeding those of Concord. It has never been known to winterkill in the grape regions of New York and is probably as hardy as any other of our Labruscas. Its fruit and foliage are very nearly immune to the fungal diseases of the grape.

Unfortunately the fruit characters of Lucile are not as desirable as the vine characters. The size, form, and color of bunches and berries are all good, making a very attractive fruit, but it has an obnoxious, foxy taste and odor objectionable to those who know good grapes though even in flavor it is better than its supposed parent and is on a par with some of the other varieties of its season. A further objection to the berries is that they are both pulpy and seedy. It is earlier than Concord, coming about with Worden or preceding it a few days. For so early a variety the fruit keeps very well and in spite of its somewhat thin skin ships very well. It is not at all capricious as to soils, seemingly thriving in all good grape soils.

LUCILE

Lucile may be recommended where an extra hardy grape is desired, for localities where the season is short, and as a variety for breeding purposes, should it prove capable of transmitting its vine characters, and for those who do not object to foxiness of taste and aroma in grapes.

J. A. Putnam of Fredonia, Chautauqua County, New York, is the producer of Lucile. The vine fruited for the first time in 1890, it being then two years old, and was introduced by Lewis Roesch of Fredonia in 1899. It is supposed to be a seedling of Wyoming which it resembles very much in both fruit and vine characters and surpasses in both. It is a typical red Labrusca in all of its characters.

Vine vigorous, hardy, very productive, yielding as good or better crops than Concord. Canes medium to long, rather numerous, intermediate in thickness, light brown; nodes strongly enlarged, usually flattened; internodes medium to short; diaphragm moderately thick; pith about medium in size; shoots slightly pubescent; tendrils continuous, of average length, bifid to trifid.

Leaf-buds below medium to small, short, moderately thick, pointed to conical, open in mid-season. Young leaves heavily tinged on lower side and along margin of upper side with bright carmine. Leaves healthy, medium to large, of average thickness, firm; upper surface light green, glossy, moderately smooth; lower surface pale green or with tinge of bronze, pubescent; veins distinct; leaf usually not lobed, with terminus acute; petiolar sinus shallow, narrow to medium, sometimes closed and overlapping; basal sinus usually absent; lateral sinus a mere notch when present; teeth very shallow, of average width. Flowers fertile, open early; stamens upright.

Fruit ripens earlier than Concord or in some seasons about with Worden, keeps fairly well. Clusters medium to large, above average length, slender, cylindrical to tapering, usually single-shouldered, very compact; peduncle intermediate in length, large; pedicel short, thick, covered with few, small, inconspicuous warts; brush light brown. Berries large to medium, roundish to somewhat oval when strongly compacted, dark red, duller than Wyoming, covered with thin lilac bloom, persistent, firm. Skin medium to thin, somewhat tender, contains a small amount of light red pigment and some astringency. Flesh pale green, translucent, juicy, rather tough, sometimes stringy, foxy, sweet next the skin to slightly tart at center, fair to good in quality, not equal to Concord but superior to Wyoming. Seeds separate with difficulty from the pulp, one to four, average three, small, broad, short to medium, blunt, dark brown; raphe obscure; chalaza intermediate in size, slightly above center, oval, distinct.

LUTIE.

(Labrusca.)

1. *Gar. Mon.*, 26:307. 1884. 2. *Ib.*, 27:304. 1885. 3. *Am. Pom. Soc. Rpt.*, 1885:85. 4. *Ib.*, 1889:120, 136. 5. *N. Y. Sta. An. Rpt.*, 13:605. 1894. 6. *Bush. Cat.*, 1894:150. 7. *Tenn. Sta. Bul.*, Vol. 9:192. 1896. 8. *N. Y. Sta. An. Rpt.*, 17:532, 545, 547, 555. 1898. 9. *Mich. Sta. Bul.*, 169:172. 1899. 10. *Am. Pom. Soc. Cat.*, 1899:29. 11. *Kan. Sta. Bul.*, 110:236. 1902.

As with the preceding variety, Lutie is chiefly valuable for its vine characters. It is vigorous, hardy, healthy, and fruitful, though scarcely equaling Lucile in any of these characters. Pomologists differ widely as to the merits of the fruit, some claiming high qualities for it and others declaring that it is no better than the average wild Labrusca. The difference in opinion is partly due to a peculiarity of the fruit. If eaten fresh from the vines, the quality, while far from being of the best, is not wholly bad, but after being picked for several days it develops so much foxiness of flavor and aroma that it is scarcely edible. As Lutie grows on the Station grounds its fruit has little merit, though somewhat attractive in appearance, and the variety can be recommended only for vigor, hardiness, resistance to disease and fruitfulness. It is given the prominence of an illustration in *The Grapes of New York* out of respect for the opinions of others rather than for its merits as it grows here. It makes a better showing in other grape regions.

Lutie is a chance seedling found on the grounds of Dr. L. C. Chisholm of Spring Hill, near Nashville, Davidson County, Tennessee. It was introduced in 1885 by Messrs. Coleman, Webber and Newson of Nashville. Lutie was placed on the grape list of the American Pomological Society fruit catalog in 1899 where it has since been retained. Its gross characters are much the same as those of Dracut Amber, Lucile, Wyoming, and Woodruff, all typical red Labruscas and worthy of cultivation only where better-flavored varieties cannot be grown.

Vine vigorous, hardy, healthy, productive. Canes short, of average number, slender, dark reddish-brown; nodes enlarged, roundish; internodes short; diaphragm thin; pith inclined to small; shoots pubescent; tendrils continuous, short to medium, bifid.

Leaf-buds small, short to medium, slender, open in mid-season. Young leaves tinged on lower side and along margin of upper side with bright carmine. Leaves

LUTIE

medium to small, of average thickness; upper surface dark green, often rugose; lower surface bronze to whitish-green, pubescent; veins somewhat distinct; leaf usually not lobed, with terminus acute to acuminate; petiolar sinus moderately deep, medium to sometimes wide; basal sinus lacking; lateral sinus rather shallow and narrow when present; teeth shallow, narrow. Flowers fertile, open somewhat early; stamens upright.

Fruit ripens earlier than Concord, some seasons about with Worden, does not keep nor ship well. Clusters medium to small, short and broad, blunt at end, cylindrical to sometimes conical, usually not shouldered, compact; peduncle intermediate in length, rather thick; pedicel short, of average thickness, covered with small, scattering, inconspicuous warts; brush slender, of average length, pale green. Berries large to below medium, roundish, light to dark red, dull, covered with thin, whitish or lilac bloom, drop badly from pedicel, nearly firm. Skin intermediate in thickness somewhat tender, adheres to the pulp, contains no pigment, astringent. Flesh pale green, translucent, moderately juicy, somewhat tough, strongly foxy, sweet next the skin to slightly tart at center, fair to possibly good in quality. Seeds adhere to the pulp unless the fruit is fully ripe, one to four, average two, usually above medium size, broad, often rather short and blunt, dark brown; raphe buried in a small, rather indistinct groove; chalaza large, at center or slightly above, irregularly circular, rather distinct.

McPIKE.

(Labrusca.)

1. *Rural N. Y.*, 55:622, *fig.*, 627. 1896. 2. *Am. Pom. Soc. Rpt.*, 1897:13. 3. *Nat. Nurs.*, 7:119. 1899. 4. *Ib.*, 8:93. 1900. 5. *Rural N. Y.*, 60:170, 226, 290, 614, 710. 1901.

McPike is noteworthy chiefly because of the large size of the berries, though the bunches, too, average large. The accompanying illustration shows the size of the berry accurately but the bunch, as shown here, is too small.[1]

McPike in vine and fruit characters is very similar to its parent, Worden, differing in having fewer but larger berries per bunch, grapes not as high in flavor, and fewer and smaller seeds. Because of a thin, tender skin the berries crack somewhat, shell more or less, and the vines are less productive than those of Worden. The faults just named seem to debar it pretty effectually from becoming a commercial grape in New York and it is not high enough in quality and is lacking in too many other

[1] The illustrations in *The Grapes of New York*, unless otherwise mentioned, are life-size; but it must be remembered that when objects having three dimensions are reproduced on a flat surface there is seemingly a considerable reduction in size. Allowance should be made for this illusion in comparing fruit with illustration.

fruit characters to make it of value for the amateur. It should be said, however, that the variety has not been largely tested in New York and further experience with it is needed to fully determine its value in this State.

This variety was originated by H. G. McPike of Mount Lookout Park, Alton, Illinois, from seed of Worden planted in 1890. It was introduced in 1897 by Silas Wilson of Atlantic, Iowa. McPike is a typical black descendant of Concord, bearing a strong resemblance in its gross characters to Eaton, Hosford, Chautauqua, King, and its parent, Worden.

Vine vigorous to medium, hardy, productive to very productive. Canes intermediate in length, number and thickness, dull dark reddish-brown; nodes enlarged, flattened; internodes very short; diaphragm thick to medium; pith large; shoots thinly pubescent; tendrils continuous, of average length, bifid to trifid.

Leaf-buds about average size, short, thick to medium, obtuse to conical, compressed. Leaves large, thick; upper surface light green, dull, medium to slightly rugose; lower surface grayish-white to bronze, heavily pubescent; veins fairly distinct; leaf not lobed, with terminus acute to obtuse; petiolar sinus deep to medium, rather wide; basal and lateral sinuses lacking; teeth intermediate in depth and width. Flowers fertile or nearly so.

Fruit ripens about with Concord or earlier, appears to keep well. Clusters variable in size, medium to short, rather broad, irregularly tapering with slight tendency to cylindrical, often blunt at ends, usually not shouldered, two to three bunches per shoot, of average compactness; peduncle medium to above in length, thick; pedicel long to medium, thick, quite brittle, nearly smooth; brush long, slender, greenish with brown tinge. Berries unusually large, roundish, purplish-black to black, covered with blue bloom, firm. Skin of medium thickness, variable in toughness, sometimes cracks, adheres considerably to the pulp, contains a large amount of purplish-red pigment, astringent. Flesh pale green, translucent, very juicy, rather tender, stringy, vinous, nearly sweet at skin to rather acid at center, fair to good in quality. Seeds moderately adherent to the pulp, one to four, average two, medium to below in size, short, broad, blunt, rather plump, light brown; raphe buried in a wide, shallow groove; chalaza rather large, at center or slightly above, somewhat obscure.

MAGNATE.

(Labrusca, Vinifera?)

1. *Mo. Hort. Soc. Rpt.*, 1891:130. 2. *Ib.*, 1892:270. 3. *Bush. Cat.*, 1894:151. 4. *Va. Sta. Bul.*, 94:141. 1898. 5. *Ga. Sta. Bul.*, 53:46. 1901.

Magnate is a green seedling of Concord and, like several others of Concord's light-colored offspring, as Lady and Martha, it is better in quality

McPIKE

than the parent though the flesh characters are not as good. It does not compare favorably with the best green grapes of its season, either in appearance or quality and is not recommended for New York.

The variety was originated by either John Burr, or Dr. Stayman of Leavenworth, Kansas, from seed of Concord. It was introduced by Stayman & Black in 1891 but has not been widely grown. It is better known in the West than in the East.

Vine medium to vigorous, hardy except in severe winters, medium to productive. Canes intermediate in length, number and size; tendrils continuous, bifid to trifid. Leaves not always healthy, large to medium, variable in color; lower surface grayish-white, pubescent. Flowers nearly fertile, open in mid-season or earlier; stamens upright. Fruit ripens about with Concord, keeps well. Clusters medium to large, sometimes rather broad, occasionally with a medium-sized single shoulder, usually compact and with many abortive fruits. Berries variable in size, roundish, pale green with trace of yellow, covered with a medium amount of gray bloom, persistent. Flesh pale green, slightly tough, vinous, somewhat musky, nearly sweet at skin to acid at center, fair to good in quality. Seeds below medium to small, short, broad, plump.

MANITO.

(Labrusca, Vinifera, Bourquiniana, Lincecumii, Rupestris.)

1. *Tex. Sta. Bul.*, **56**:279. 1900. 2. *Ga. Sta. Bul.*, **53**:46. 1901. 3. *Rural N. Y.*, **60**:614. 1901. 4. *Ib.*, **62**:790. 1903. 5. *Mo. Hort. Soc. Rpt.*, **1904**:305. 6. *Can. Cen. Exp. Farms Rpt.*, **1905**:107.

Manito is one of Munson's grapes recommended for both the North and the South. It is remarkable in having for its immediate ancestors five species, Lincecumii, Rupestris, Labrusca, Vinifera, and Bourquiniana. As Manito grows at this Station, its vine characters are all good and the fruit is passably so. According to the originator, the variety endures extremes of climate very well and has stood the cold of the New York winter and the heat of summer without any perceptible injury. The fruit is not sufficiently handsome nor of high enough quality to recommend the variety highly for this State, but it keeps well, ships well, is said to make good wine, and is worthy a trial in experimental vineyards at least. A point of merit is earliness, as it ripens just before Moore Early.

The variety was produced from seed of America pollinated by Brilliant.

The seed of Manito was planted in 1895 and the variety was introduced by the originator in 1899.

Vine medium to vigorous, hardy, medium to productive. Canes long, rather numerous and thick, dark reddish-brown, surface covered with blue bloom, nodes enlarged, often flattened; internodes intermediate in length; diaphragm thick; pith large to medium; shoots thinly pubescent; tendrils medium to above in length, bifid to trifid.

Leaf-buds large, of average length, thickish, conical to obtuse, open very late. Young leaves tinged on under side and along margin of upper side with rose-carmine. Leaves medium to below, of average thickness; upper surface dark green, glossy, smooth to medium; lower surface duller than upper surface, thinly pubescent; veins moderately distinct; lobes usually three in number, with terminal lobe variable; petiolar sinus medium to deep, inclined to narrow; basal sinus usually lacking; lateral sinus shallow, narrow, often a mere notch; teeth of average depth, wide. Flowers semi-fertile, open in mid-season or later; stamens upright.

Fruit ripens about with Moore Early, keeps and ships well. Clusters large to below medium, often quite long, slender to medium, cylindrical, sometimes with enlarged end, usually not shouldered, loose; peduncle intermediate in length, slender; pedicel short, slender, nearly smooth; brush light green with faint reddish tinge. Berries intermediate in size, roundish to slightly oval, dull purplish-black, covered with a medium amount of blue bloom, persistent, moderately firm. Skin thin, tender, adheres considerably to the pulp, contains a large amount of wine-colored pigment, slightly astringent. Flesh pale green, with slight pink tinge, translucent, moderately juicy, tender and almost melting, not very aromatic, sweet next the skin to agreeably tart at center, good in quality. Seeds separate easily from the pulp, one to four, average two, surface often rough and warty, intermediate in size, length and breadth, darkish brown; raphe obscure; chalaza of fair size, oval to rather pear-shaped, often indistinct.

MARIE LOUISE.

(Labrusca, Vinifera?)

1. *U. S. D. A. Rpt.*, 1887:634. 2. *Bush. Cat.*, 1894:151. 3. *N. Y. Sta. An. Rpt.*, 15:295. 1896. 4. *Ib.*, 17:532, 548, 555. 1898. 5. *Va. Sta. Bul.*, 94:141. 1898. 6. *Ga. Sta. Bul.*, 53:46. 1901.

The parentage of Marie Louise is unknown but it seems to be a typical green seedling of Concord and, as tested at this Station, is of no especial merit. It is surpassed by Diamond, Lady, Martha, and nearly a score of other green grapes.

The vine characters here are not satisfactory. It is only moderately productive and for some years has been affected with chlorosis.

MANITO

Marie Louise was originated by Theophile Huber of Illinois City, Illinois, about 1880. Besides the characters of the variety, the work of the originator would indicate that it is a Concord seedling. There are no records of its ever having been widely disseminated.

Vine intermediate in vigor, not hardy nor productive. Canes short, not numerous, dark brown; tendrils continuous, bifid. Leaves small to medium, intermediate in thickness and smoothness; lower surface tinged with bronze, heavily pubescent. Flowers nearly fertile, open in mid-season; stamens upright. Fruit ripens about with Worden, does not keep well. Clusters small to medium, short, slender, cylindrical, usually with a small single shoulder, rather loose. Berries small to medium, roundish to oval, pale green with tinge of yellow, covered with thin gray bloom, shatter badly, not very firm. Skin thin, of medium toughness. Flesh pale green, tender, sprightly, somewhat vinous, sweet at skin to tart at center, good to very good in quality. Seeds separate easily from the pulp, not numerous, small, short and broad, plump.

(I) MARION.

(Riparia, Labrusca.)

1. *Horticulturist*, **13**:13. 1858. 2. *Mag. Hort.*, **26**:100. 1860. 3. *Am. Pom. Soc. Rpt.*, 1860:83. 4. Fuller, 1867:244. 5. *Bush. Cat.*, 1883:120. 6. *Kan. Sta. Bul.* **14**:89. 1890. 7. *N. Y. Sta. An. Rpt.*, **10**:497. 1891. 8. *Ill. Sta. Bul.*, **28**:255. 1893. 9. *N. Y. Sta. An. Rpt.*, **17**:532, 545, 546, 548, 555, 559. 1898.

Black German (2). MARION PORT (2, 4).

Marion is an old variety of unknown parentage but so closely resembling Clinton in both botanical and horticultural characters as to be clearly of the type of that variety. In many grape regions it is held that this variety surpasses Clinton as both a table and a wine grape. The growth of Marion is vigorous, the vine is hardy but hardly sufficiently productive, and is susceptible to mildew and to leaf-hoppers. The fruit is pleasantly sweet and spicy though not of high enough quality for a table grape, but making, according to the following, from a French authority, a very good dark red wine.[1]

"With regard to intense coloring, without any foxy taste, nothing equals the wine made of the Marion grape; one-twentieth part is sufficient to give to water even a superior wine color; the somewhat violet shade is easily transformed into a lively red by adding some acid wine or a very small quantity of tartaric acid."

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[1] *Bush. Cat.*, 1883:120.

The fruit colors early in the season but ripens very late, hanging well on the vines and improving with a light touch of frost. Marion is not much grown in New York as a wine grape, though it might prove of value because of its coloring properties for the making of some wines.

This variety was brought to notice by a Mr. Shepherd of Marion, Ohio, over fifty years ago. It was first known as Black German but this name was changed to Marion Port. At about the same time, Nicholas Longworth received a variety resembling the Isabella from Marion, Ohio, probably also from Shepherd, which he disseminated under the name Marion. Owing to the similarity of the names, the two varieties became badly confused. The true Marion, which many believed to be identical with York Madeira, was soon dropped from cultivation and the Marion Port assumed the name of Marion. Shepherd did not know where the Marion Port had originated but stated that it had come originally from Pennsylvania. It is quite possible that it is some old variety reintroduced under this name. The species of the variety is usually given as Riparia but as the tendrils are often continuous, there is evidently an admixture of Labrusca blood.

Vine vigorous, usually hardy, medium to productive, susceptible to injury from leaf-hoppers. Canes very long, intermediate in number and thickness, dark reddish-brown, surface covered with blue bloom; nodes slightly enlarged, flattened; internodes very long to medium; diaphragm thin; pith of average size; shoots glabrous, younger shoots tinged with reddish-purple; tendrils continuous, sometimes intermittent, long, bifid.

Leaf-buds nearly medium in size and thickness, short, conical, often strongly compressed, open early; young leaves tinged on under side and along margin of upper side with carmine. Leaves unusually large, of average thickness; upper surface dark green, glossy; lower surface pale green, somewhat cobwebby to nearly smooth; veins well defined; leaf not lobed with terminus acuminate; petiolar sinus very deep, narrow, often closed and overlapping; basal and lateral sinuses lacking; teeth shallow, rather wide. Flowers sterile, open very early; stamens reflexed.

Fruit ripens in mid-season, keeps fairly well. Clusters medium to below, short and slender, cylindrical to tapering, single-shouldered, compact; peduncle short, intermediate in thickness; pedicel short, slender, covered with few, inconspicuous warts; brush very short, wine-colored. Berries medium to small, roundish, black, slightly glossy, covered with abundant blue bloom, persistent, firm. Skin medium to thin, rather tough, adheres slightly to the pulp, contains much dark wine-colored pigment,

MARION

slightly astringent. Flesh dark green, translucent, juicy, fine-grained, tough, sprightly, spicy, agreeably tart but free from astringency, no more than fair in quality. Seeds adhere somewhat to the pulp, one to five, average four, above medium in size, broad, short, usually not notched, very plump, brownish; raphe buried in a narrow, shallow groove; chalaza small, nearly central, oval, obscure.

(II) MARION.

(Labrusca, Vinifera?)

1. *U. S. Pat. Off. Rpt.*, 1856:433. 2. Downing, 1857:341. 3. *Am. Pom. Soc. Rpt.*, 1860:83. 4. *Mag. Hort.*, 26:100. 1860. 5. (?) *Gar. Mon.*, 3:52. 1861. 6. Fuller, 1867:244. 7. *Rural N. Y.*, 53:793. 1894.

German Grape (7).

This variety much resembles Isabella and was said by some to be identical with it. It is probably the same as York Maderia. Downing[1] discusses it as follows:

"Origin unknown. Sent to Mr. Longworth from Marion, Ohio, and by him disseminated. It much resembles the Isabella in shape and size of berry and form of bunch, but more uniform in its ripening and more delicate in flavor, ripening about the same time. Growth healthy, making firm and short-jointed wood, with strong, red tendrils; a good bearer.

"Bunches large, regular, seldom shouldered. Berries large, round, inclining to oval, dark purple with a bloom, juice abundant, pulp thin, not sufficiently tested for wine, a promising variety."

MARTHA.

(Labrusca, Vinifera?)

1. *Mag. Hort.*, 30:26. 1864. 2. *U. S. D. A. Rpt.*, 1865:196. 3. Fuller, 1867:227. 4. *Mag. Hort.*, 34:236. 1868. 5. *Grape Cult.*, 1:10, 14, 15, 42, 129, *fig.*, 130. 1869. 6. *Am. Pom. Soc. Cat.*, 1869:42. 7. *Bush. Cat.*, 1883:119. *fig.* 8. *Kan. Sta. Bul.*, 14:89. 1890. 9. *Ill. Sta. Bul.*, 28:265. 1893. 10. *Mo. Sta. Bul.*, 46:40, 42, 44, 46. 1899. 11. *N. Y. Sta. An. Rpt.*, 18:396. 1899. *Miller No. 1* (2, 5).

Martha was at one time the most popular of the green grapes but the introduction of many other green varieties of superior fruit and vine characters has gradually reduced its popularity until it is now but little grown.

[1] Downing, 1857:341.

It is a seedling of Concord and resembles its parent greatly, differing from it chiefly in the following particulars: Fruit green, a week or more earlier, bunch and berries smaller, quality far better, being sweeter, more delicate, and with less foxiness and less pulp. About the only difference in the vines is a lighter shade of green in Martha and less robustness, with blossoms opening a few days earlier than Concord. Martha is often sold in the markets as Niagara, though the resemblance between the two is not strong, the Niagara being larger in bunch and berry and not as high in quality. One of the defects of Martha, and the chief cause of its going out of favor, is that it does not keep nor ship well. A very good white wine is made from Martha. The variety is still being planted in some parts of the South, but is generally abandoned in the North.

Samuel Miller, then of Calmdale, Lebanon County, Pennsylvania, grew Martha from seed of Concord sent him by E. W. Bull. The variety was introduced about 1868 by J. Knox of Pittsburg, Pennsylvania. It was placed on the American Pomological Society fruit catalog list in 1869 and dropped from that list in 1899.

Vine variable in vigor, hardy, intermediate in productiveness, somewhat susceptible to attacks of mildew in unfavorable seasons. Canes medium to long, of average number and size, rather dark reddish-brown, surface covered with thin bloom, slightly roughened; tendrils continuous to intermittent, bifid. Leaves large to medium, rather thick; upper surface light green, intermediate in smoothness; lower surface light bronze, heavily pubescent; veins well defined. Flowers self-fertile, open in mid-season; stamens upright.

Fruit ripens somewhat earlier than Concord, does not keep nor ship well. Clusters medium in size, often below average length, intermediate in width, tapering to cylindrical, usually single-shouldered, inclined to be loose. Berries medium in size, roundish, light green with tinge of yellow, covered with thin gray bloom, persistent, medium in firmness. Skin thin, very tender, does not usually crack, adheres considerably to the pulp, contains no pigment, with scarcely any astringency. Flesh pale yellowish-green, juicy, moderately tough, fine-grained, slightly foxy, sweet at skin to somewhat tart at center, mild, good to very good in quality but not as good as Lady. Seeds few in number, rather adherent, intermediate in size and length, broad, rather blunt, dark brown; raphe obscure; chalaza small, slightly above center, oval, frequently shows as a mere depression. Must 85°–90°.

MASSASOIT

MASSASOIT.

(Labrusca, Vinifera.)

1. *Am. Pom. Soc. Rpt.*, **1862**:148, 152. 2. *Horticulturist*, **18**:99. 1863. 3. *Am. Pom. Soc. Cat.*, **1867**:44. 4. *Horticulturist*, **24**:126. 1869. 5. *Grape Cult.*, **1**:180, 326. 1869. 6. *Ind. Sta. Bul.*, **33**:34. 1890. 7. *Gar. and For.*, **3**:214, 255, 490. 1890. 8. *Kan. Sta. Bul.*, **28**:164. 1891. 9. *N. Y. Sta. An. Rpt.*, **10**:497. 1891. 10. *Bush. Cat.*, **1894**:154. 11. *N. Y. Sta. An. Rpt.*, **17**:533, 548, 555. 1898.

ROGERS' No. 3 (1, 2, 3). *Rogers' No. 3* (4, 5, 6, 10).

Massasoit is distinguished as being the earliest of Rogers' hybrids though it is not, as some viticulturists say, as early as Hartford, ripening rather with Delaware or a little later. It has the peculiarity or defect of being at its best before full maturity, and of developing after ripening a degree of foxiness which impairs its quality. In shape and size of berry, and sometimes in bunch, there is a striking resemblance to Isabella, another suggestion of Vinifera in the latter sort, but the color is that of Catawba. The texture of the fruit is especially good, firm but tender and juicy, while the flavor, as with all of Rogers' grapes, is rich and sweet, though in the case of Massasoit, hardly as good as others of these hybrids. The vine is vigorous, hardy and productive but very subject to mildew and rot. Massasoit is well worth a place in the home vineyard, and as an early grape, of fine quality for the local market.

For an account of the early history and parentage of Massasoit the reader is referred to Rogers' Hybrids. The variety attracted considerable attention even while it was known only as *Rogers' No. 3* and was placed on the American Pomological Society's list of recommended sorts as early as 1867. In 1869 it was named by Rogers after Massasoit, the Indian chief who was so intimately connected with the early history of Massachusetts.

Vine vigorous to very vigorous, hardy in all but unusually cold winters, often very productive, very subject to rot and mildew. Canes long, intermediate in number, thick, inclined to dark brown with slight reddish tinge; nodes enlarged, flattened; internodes long to medium; diaphragm of average thickness; pith large; shoots thinly pubescent; tendrils continuous, long, trifid to bifid.

Leaf-buds large to medium, long, unusually thick, obtuse to conical, heavily coated with brownish pubescence. Young leaves tinged on upper and under sides with rose-carmine. Leaves variable in size, medium to thin, upper surface light green, dull, smooth

to medium; lower surface pale green, slightly pubescent; veins well defined; lobes three to sometimes obscurely five with terminus acute; petiolar sinus deep, narrow to medium; basal sinus shallow, narrow, often obscure; teeth very shallow, of average width. Flowers sterile, open moderately late; stamens reflexed.

Fruit ripens about with Delaware, keeps well. Clusters variable in size, of medium length, often rather broad, cylindrical to tapering, frequently single-shouldered, variable in compactness; peduncle short to medium, thick; pedicel of average length, slender to medium, covered with few, indistinct warts, enlarged at point of attachment to fruit; brush of fair length, pale green. Berries large to medium, roundish to oval, dark brownish-red, dull, covered with lilac bloom, very persistent, moderately firm. Skin thin, tender, adheres considerably to the pulp, contains no pigment, astringent. Flesh pale green, translucent, juicy, fine-grained, somewhat soft, stringy, foxy, sweet next the skin but acid at center, good to very good in quality, somewhat resembling Salem. Seeds slightly adherent, one to five, average three, large to medium, somewhat broad, distinctly notched, above medium in length, plump, blunt; raphe buried in a deep, broad groove; chalaza small, slightly above center, circular to nearly oval, often showing only as a depression.

MAXATAWNEY.

(Labrusca, Vinifera.)

1. *Horticulturist*, **15**:134, 191, 538. 1860. 2. *Gar. Mon.*, **3**:341. 1861. *col. pl.* 3. *Am. Pom. Soc. Rpt.*, **1862**:135, 152. 4. *Am. Pom. Soc. Cat.*, **1862**:90. 5. *Grape Cult.*, **1**:10, 42, 141, 149, 296, 368. 1869. 6. *Ib.*, **2**:76, 85, *fig.*, 86, 297. 1870. 7. *Bush Cat.*, **1883**:120, 121. *fig.* 8. *Ala. Sta. Bul.*, **10**:11. 1890. 9. *N. Y. Sta. An. Rpt.*, **11**:630. 1892. 10. *Tenn. Sta. Bul.*, Vol. **9**:184. 1896. 11. *N. Y. Sta. An. Rpt.*, **17**:533, 548, 556. 1898.

At one time very popular, grape-growers now seldom hear of Maxatawney. At best it is not a northern grape, ripening its fruit in New York only occasionally, and is much subject to fungal diseases. It is an interesting variety historically as being one of the first good green grapes and as showing almost unmistakable Vinifera characters, probably another example of the fortuitous hybridization which gave us so many valuable varieties before artificial hybridization of Vinifera with native grapes had been tried.

In 1843, a man living in Eagleville, Montgomery County, Pennsylvania, received several bunches of grapes from a friend in Maxatawney, Berks County, Pennsylvania. The seeds of these grapes were planted and the following spring one seed grew. This was the original vine of what was later named Maxatawney. It attracted no more than local attention until about 1860 when, through the efforts of Peter Crans of Philadelphia, it received several favorable notices in the horticultural press and cuttings

were disseminated for testing. The man who had originated the variety, for fear of being besieged by amateur grape cultivators, never allowed his name to become known. Maxatawney was placed on the American Pomological Society list of sorts recommended for cultivation in 1862, but was dropped in 1897. From the first it has been recognized that Maxatawney shows Vinifera blood. Some have even gone so far as to say that it is a derivative, in part, from Malaga. It does not appear, however, that such preciseness is justified. The vine shows the continuous tendrils and the thick, pubescent leaf of Labrusca. In the lobing of the leaves, the susceptibility to mildew, the oval berries, the vinous flavor, and the appearance of occasional seeds, one can detect the characters of Vinifera.

Vine medium to vigorous, not always hardy, variable in productiveness. Canes medium to above in length, of average number, slender to medium; tendrils continuous, bifid. Leaves medium to large, dark green, thick; lower surface grayish-white with tinge of bronze, heavily pubescent. Flowers sterile or nearly so, some blossoms imperfectly self-fertile, open in mid-season; stamens upright. Fruit ripens after Concord, in some seasons fully as late as Catawba, keeps fairly well. Clusters small to above medium, often short and slender, cylindrical, occasionally with a small single shoulder, rather open to fairly compact. Berries variable in size, oval, not uniform in color, pale red or dull greenish with amber tinge, covered with thin gray bloom, persistent. Skin medium in thickness, often very tough, astringent. Flesh slightly tender, foxy, sweet at skin to tart at center, good to very good in quality. Seeds few, separate easily from the pulp, large, of medium length, very broad, blunt. Must 76°.

MERRIMAC.

(Labrusca, Vinifera.)

1. *Am. Pom. Soc. Rpt.*, **1860**:86. 2. *Gar. Mon.*, 6:23, 140, 276, 277. *fig.* 1864. 3. *Mass. Hort. Soc. Rpt.*, **1865**:40. 4. *N. Y. Ag. Soc. Rpt.*, **1865**:339. *fig.* 5. *Am. Pom. Soc. Cat.*, **1867**: 44. 6. Fuller, **1867**:229, 230. 7. *Horticulturist*, **24**:126. 1869. 8. *Am. Jour. Hort.*, **5**:263. 1869. 9. *Grap Cult.*, 1:181, 239, 327. 1869. 10. *Mich. Pom. Soc. Rpt.*, **1875**:397. *fig.* 11. *Bush. Cat.*, **1883**:121. 12. *Mich. Sta. Bul.*, **7**:133. 1885. 13. *Ark. Sta. Bul.*, **39**:32. 1896. 14. *Tenn. Sta. Bul.*, Vol. 9:184. 1896. 15. *Tex. Sta. Bul.*, **48**:1150, 1159. 1898. 16. *N. Y. Sta. An. Rpt.*, **17**:533, 541, 544, 548, 556. 1898.

ROGERS' No. 19 (1, 2, 3, 4, 5, 6). *Rogers' No. 19* (7, 8, 9, 10, 11, 13).

Merrimac is accredited by some grape-growers as the best black grape among Rogers' hybrids, but an analysis of the characters of the several black varieties produced by Rogers seems to show that it is surpassed at least by Wilder and Herbert and possibly by Barry. The attributes

of Merrimac are so nearly those given for the several others of these grapes hitherto described, that there need be no general discussion of it here other than to state its chief points of difference. It is stronger in growth, slightly more productive, possiby hardier, and more exempt from fungal diseases than the average of Rogers' hybrids. Its season is about that of Concord, a little earlier than that of most of its kindred hybrids. It is not as high in quality, and its flesh, skin and seed characters are such that it is not as pleasant to eat as the black varieties named above. Merrimac is worthy a place in collections and in the gardens for the sake of variety.

For a full account of the parentage and details of the origin of the variety see "Rogers' Hybrids." Merrimac was first known as No. 19, and was considered by those to whom Rogers sent his grapes of peculiar excellence, and was granted a premium by the Essex Agricultural Society in 1859. In 1867, Merrimac, with five others of Rogers' numbered varieties, was placed on the grape list of the American Pomological Society fruit catalog, where it is still retained. In 1869, Rogers gave this variety the name Merrimac after the historic New England river.

Vine vigorous, usually hardy but subject to injury in severe seasons, moderately productive to productive. Canes intermediate in length and number, medium to slender, dark brown, surface slightly roughened; nodes somewhat enlarged, usually flattened; internodes medium to short; diaphragm thick; pith of average thickness; shoots nearly glabrous; tendrils intermittent, short, bifid.

Leaf-buds intermediate in size, short to medium, thick, obtuse to conical, open in mid-season. Young leaves tinged on lower side and along margin of upper side with rose-carmine. Leaves large to medium, thin; upper surface very light green, glossy, nearly smooth; lower surface pale green, slightly pubescent and cobwebby; veins distinct; lobes usually three with terminal lobe obtuse; petiolar sinus medium to deep, narrow, sometimes closed and overlapping; basal sinus usually lacking; lateral sinus shallow, narrow; teeth shallow to medium, of average width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit ripens with or later than Concord, ships and keeps well. Clusters variable in size, intermediate in length, often broad, tapering to cylindrical, variable in compactness; peduncle short to medium, of average thickness; pedicel intermediate in length, slender, covered with numerous, small, inconspicuous warts; brush wine-colored. Berries large to medium, roundish, black, glossy, covered with abundant blue bloom, persistent, firm. Skin thick, tough, adheres slightly to the pulp, contains a small amount

MERRIMAC

of wine-colored pigment, astringent. Flesh light green, translucent, juicy, moderately fine-grained, medium tender, stringy, with little or no aroma, good in quality. Seeds rather adherent, one to five, average four, somewhat large and broad, long to medium, frequently with enlarged neck, brownish; raphe sometimes shows as a narrow cord; chalaza of average size, plainly above center, distinct.

MILLS.

(Labrusca, Vinifera.)

1. *Horticulturist*, **30**:93. 1875. 2. *Rural N. Y.*, **47**:144, 146. *fig.* 1888. 3. *Can. Hort.*, **11**:102, 103. *fig.* 1888. 4. *Ohio Hort. Soc. Rpt.*, **1888–9**:107. 5. *Kan. Sta. Bul.*, **14**:89. 1890. 6. *Ib.*, **28**:160. 1891. 7. *N. Y. Sta. An. Rpt.*, **12**:621. 1893. 8. *Rural N. Y.*, **53**:6. 1894. 9. *Bush. Cat.*, **1894**:155. 10. *Rural N. Y.*, **54**:715, 779, 795. 1895. 11. *Am. Pom. Soc. Cat.*, **1897**:19. 12. *N. Y. Sta. An. Rpt.*, **17**:533, 548, 556, 559. 1898. 13. *Mich. Sta. Bul.*, **169**:173. 1899. 14. *Ga. Sta. Bul.*, **53**:46, 51. 1901.

Probably none of the commonly cultivated grapes varies more under different cultural conditions than Mills. It is chiefly from this fact that viticulturists are so diverse in their opinions of it, some claiming that it is among our best grapes and others pronouncing it almost worthless. Mills grown in the vineyards of this Station is one of the half dozen best out of 270 varieties in its fruit characters. The bunches and berries are large and well-formed, the berries being a handsome black with bluish bloom and adhering so firmly to the stem that the fruit may be left until April without shelling. The berries are firm and solid, with the skin adherent to the pulp almost as in the Viniferas, and with the same texture of flesh as in Black Hamburg. The flesh, despite the solidity, is juicy and parts readily from the seeds. Its flavor is rich, sweet, vinous, with a trace of muskiness. The grapes are hardly surpassed in keeping quality and seldom if ever crack or shatter. The season is a little earlier than Concord.

But when we have described its fruit characters, practically all that can be is said in its favor. The vines are of only medium vigor, are not hardy, are fruitful only under the most favorable conditions, and are very subject to mildew. In New York neither wood nor roots ripen well in the average season and the variety is a most difficult one for nurserymen to handle. That it succeeds only on certain soils is known but data are not at hand to determine what conditions of soil suit it best. The soil on which the vines of this Station are growing is a rather heavy, rich clay and Mills makes a very fair growth here. The variety is of doubtful

commercial value, unless it be for a special market, but for the garden or the amateur viticulturist it is undoubtedly one of the best if adapted to the soil and location. It is possible that the commercial grower may be able to graft it to advantage on some variety with better vine characters.

William H. Mills of Hamilton, Ontario, produced the Mills grape about 1870 from seed of Muscat Hamburg fertilized by Creveling. It was not introduced to the public, however, until 1888, when it was offered for sale by Ellwanger & Barry of Rochester, New York. Mills was placed on the grape list of the American Pomological Society fruit catalog in 1897 but was dropped from the list two years later. The variety has been widely tested but as yet has not become of commercial importance in any of the grape regions of the country.

Vine medium to above in vigor, not hardy, productive unless injured by the winter, somewhat subject to mildew. Canes long, of medium size, rather thick, light brown; nodes slightly enlarged and flattened, internodes medium to large; diaphragm rather thick; pith quite large; shoots slightly pubescent; tendrils intermittent, of average length, bifid to trifid.

Leaf-buds small to medium, short, somewhat slender, conical to pointed, open very late. Young leaves tinged with carmine slightly on under side and along margin of upper side, which is heavily coated with whitish pubescence. Leaves medium to large, thick; upper surface dark green, dull, medium to rugose; lower surface pale green, cobwebby; lobes three to five with terminus acute to acuminate; petiolar sinus intermediate in depth and width; basal and lateral sinuses quite deep and wide; teeth deep, of average width. Flowers nearly fertile, open in mid-season; stamens upright.

Fruit ripens somewhat later than Concord, an unusually good shipper and keeper. Clusters large to medium, long, slender to medium, cylindrical to slightly tapering, often single-shouldered but sometimes double-shouldered, compact; peduncle short, thick; pedicel intermediate in length, medium to slender, covered with numerous, small warts, much enlarged at point of attachment to fruit; brush moderately long, wine-colored. Berries large, oval to roundish, very dark red to jet-black when fully ripe, covered with abundant blue bloom, very persistent, firm. Skin thick and somewhat tough, strongly adherent to the pulp, not astringent. Flesh light green, translucent, juicy, not tough but meaty, with a rich, sprightly flavor, vinous, sweet, very good to best. Seeds separate easily from the pulp, one to three, average two, medium to large, variable in length and bluntness, brownish, frequently with enlarged neck; raphe obscure; chalaza small, above center, irregularly oval to pear-shaped, distinct.

MILLS

MISSOURI RIESLING.[1]

(Riparia, Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1881:33, 149. 2. *Ill. Hort. Soc. Rpt.*, 1883:76. 3. *Bush. Cat.*, 1883: 103, 132. 4. *Am. Pom. Soc. Cat.*, 1889:24. 5. *Gar. and For.*, 3:290, 599. 1890. 6. *Kan. Sta. Bul.*, 14:89. 1890. 7. *Ill. Sta. Bul.*, 28:265. 1893. 8. *N. Y. Sta. An. Rpt.*, 13:605. 1894. 9. *Bush. Cat.*, 1894:5, 156. 10. *N. Y. Sta. An. Rpt.*, 17:533, 548, 556. 1898. 11. *Ala. Sta. Bul.*, 110:86. 1900.

Riesling (3). *Grein's No. 1* (3, 9).

Unfortunately the Southern Riparia seedlings, Missouri Riesling, Elvira, Noah, Grein Golden, and others, do not attain perfection in New York. The vines are sufficiently hardy, vigorous, productive, and healthy, as a rule, but the fruit is lacking in quality and not acceptable for table use nor wholly desirable in wine-making. It is only in the long seasons and under the sunny skies of the South that the varieties of this group of Riparias are well grown. As one of these grapes, Missouri Riesling is not adapted to New York; as it grows here it is not of high quality and does not mature. The variety is illustrated and described not because of intrinsic value in this region but as of interest as representing a somewhat distinct and important group of native grapes. It is a beautiful fruit when well grown and has many good qualities as a wine grape, and should it prove adapted to some favored nook or corner of the State, its culture would probably prove profitable.

Missouri Riesling was originated by Nicholas Grein about 1870, probably from seed of Taylor. Grein planted seeds of the European Riesling and of Taylor at the same time and he always supposed that none of the Taylor seeds grew and that the Missouri Riesling was a seedling of the Riesling of Germany. Since the Missouri Riesling is evidently of Riparia-Labrusca lineage and shows no Vinifera whatever, it is to be presumed that Grein's labels were confused. It was placed on the grape list of the American Pomological Society fruit catalog in 1889 and is still retained there.

Vine variable in vigor, usually hardy, medium to productive. Canes very long, numerous, thick, dark brown; nodes enlarged, not flattened; internodes long; diaphragm

[1] Pronounced Reezling.

below average thickness; pith medium to above in size; shoots pubescent; tendrils continuous, long, trifid to bifid.

Leaf-buds medium in size, short, thick, obtuse to conical, open in mid-season. Young leaves slightly tinged on under side only with faint brownish-carmine. Leaves large, thick to medium; upper surface dark green, glossy, nearly smooth; lower surface pale green, thinly pubescent; veins distinct; lobes usually five with terminal lobe acuminate; petiolar sinus deep, narrow to medium; basal sinus shallow and wide; lateral sinus deep, above average width; teeth deep to medium, wide. Flowers fertile to semi-fertile, open in mid-season; stamens upright.

Fruit usually ripens later than Concord and a little before Catawba, does not keep nor ship well. Clusters variable in size, medium to short, of average width, sometimes cylindrical, frequently single-shouldered, variable in compactness; peduncle medium to long, slender; pedicel above average length, covered with few small warts; brush green with tinge of yellow. Berries intermediate in size, roundish to oval, pale or yellowish-green changing to light red or with tinge of pink when fully ripe, not glossy, covered with thin gray bloom, persistent, firm. Skin sprinkled with small brown dots, thin, tough, adheres to the pulp, contains no pigment, slightly astringent. Flesh pale green, translucent, moderately juicy, tender, fine-grained, lacking somewhat in aroma, sweet at skin to agreeably tart at center, mild, of fair quality. Seeds adherent, one to four, average two, with surface somewhat roughened, intermediate in size and breadth, medium to long, not blunt, dark brown; raphe obscure; chalaza of fair size, above center, ovate, very distinct.

MONROE.

(Labrusca, Bourquiniana?)

1. *Gar. Mon.*, 22:176. 1880. 2. *Am. Pom. Soc. Rpt.*, 1881:40, 43. 3. *Bush. Cat.*, 1883:122. 4. *N. Y. Sta. An. Rpt.*, 9:327. 1890. 5. *Bush. Cat.*, 1894:156. 6. *Va. Sta. Bul.*, 94:135. 1898. 7. *N. Y. Sta. An. Rpt.*, 17:533, 546, 547, 552. 1898. 8. *Mich. Sta. Bul.*, 169:173. 1899.

It is now about thirty years since Monroe was offered to the grape-growers of this State, and as a New York seedling, yet it can now scarcely be found under cultivation. It has failed because it is lacking in quality and because its vine characters are not sufficiently good to attract either the commercial or the amateur grape-grower.

This variety was raised by Ellwanger & Barry of Rochester, New York, from mixed seed of Delaware, Diana, Concord, and Rebecca, and was first fruited in 1867. Patrick Barry at one time stated that it was a cross of Delaware and Concord. This, while evidently a surmise, appears quite probable. It was tested by the originators for many years and was

MISSOURI RIESLING

finally introduced in 1880 but was dropped some years ago from the list of recommended sorts in Ellwanger & Barry's catalog.

Vine vigorous to medium, hardy, variable in productiveness, somewhat susceptible to attacks of mildew and rot. Canes medium to long, often numerous, medium to slender, covered with considerable blue bloom; tendrils continuous, bifid. Leaves intermediate in size and color; lower surface pale green, thinly pubescent. Flowers fertile, open in mid-season; stamens upright. Fruit ripens soon after Hartford, keeps well. Clusters above medium to medium in size and length, often broad and cylindrical, rather blunt at ends, usually single-shouldered, the shoulder being attached to the bunch by a long stem, nearly compact, sometimes with a number of abortive fruits. Berries medium to above in size, roundish, black or purplish-black, covered with heavy blue bloom, persistent Skin thick, tough, adheres considerably to the pulp, contains a large amount of purplish-red pigment, not astringent. Flesh pale green with a tinge of yellow, rather transparent, tender and almost melting, nearly sweet, lacks character, no more than fair in quality. Seeds separate easily from the pulp, intermediate in length, size, and width.

MONTEFIORE.

(Riparia, Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1881:44. 2. *Mo. Hort. Soc. Rpt.*, 1883:44, 182. 3. *Ib.*, 1884:216. 4. *Kan. Sta. Bul.*, 14:89. 1890. 5. *N. Y. Sta. An. Rpt.*, 11:630. 1892. 6. *Ill. Sta. Bul.*, 28:256. 1893. 7. *Col. Sta. Bul.*, 29:19. 1894. 8. *Bush. Cat.*, 1894:156. *fig.* 9. Husmann, 1895:36. 10. *N. Y. Sta. An. Rpt.*, 17:533, 548, 556. 1898.

Rommel's Taylor Seedling No. 14 (8). *Taylor's Seedling No. 14* (1).

Montefiore, named in honor of the Jewish philanthropist, Moses Montefiore, is one of Rommel's seedlings of Taylor. The variety has been largely grown in Missouri and the Southwest as a claret wine grape but is almost unknown in New York and the East. Montefiore is reported as succeeding in the Lake District of Ohio and, with the exception that it is somewhat uncertain in bearing and not always productive on the grounds of this Station, it has grown well in this section of New York. While Montefiore is essentially a wine grape, yet it is pleasing in taste and texture of fruit and is far better in quality than many of the coarser Labruscas so commonly cultivated. It keeps and ships well and presents an attractive appearance as a table grape. Were it not that the variety has been under cultivation for thirty years or more and therefore probably tested and discarded in New York, we should recommend it for extensive trial, especially as a red wine grape.

Jacob Rommel[1] of Morrison, Missouri, produced this variety from seed of Taylor said to have been fertilized with Ives. It was exhibited by Rommel at the American Pomological Society meeting in 1879, where it attracted the attention of Isadore Bush, of Bush & Son & Meissner, who named it Montefiore and introduced it the following year

Vine medium to vigorous, hardy, an uncertain bearer. Canes long, of average number, thick, dark brown with slight reddish tinge, surface covered with thin blue bloom; nodes enlarged, flattened; internodes long to medium; diaphragm thick; pith medium to above in size; shoots thinly pubescent; tendrils continuous, long, bifid.

Leaf-buds of average size, short, thick, conical to obtuse, open in mid-season. Young leaves tinged on under side and along margin of upper side with light brownish-carmine. Leaves intermediate in size, thick to medium; upper surface light green, dull, smooth to medium; lower surface grayish-white, pubescent; veins well defined; lobes three when present with terminus acute to acuminate; petiolar sinus of average depth, medium to wide; basal sinus lacking; lateral sinus very shallow and narrow when present; teeth deep to medium, intermediate in width. Flowers self-sterile to imperfectly self-fertile, open in mid-season; stamens upright.

Fruit ripens about with Concord or later, keeps well. Clusters medium to small, rather short, of average width, tapering to cylindrical, frequently single-shouldered, the shoulder being connected to the bunch by a long stem, compact; peduncle medium to short, intermediate in size; pedicel short, slender, nearly smooth; brush of fair length, tinged with red. Berries medium to small, oval to roundish, often compressed, black, glossy, covered with abundant blue bloom, persistent, firm. Skin medium to thin, tough, adheres slightly to the pulp, with wine-colored pigment, astringent. Flesh medium green, translucent, juicy, fine-grained, tender and melting, vinous, sweet to agreeably tart, fair to good in quality. Seeds separate easily from the pulp, one to five,

[1] Jacob Rommel was born in Philadelphia, Pennsylvania, in 1837. The family moved to Hermann, Missouri, in 1838 where his father, Jacob Rommel, Sr., engaged in the nursery business and became interested in grape-growing and wine-making. In 1860 the younger Rommel removed to Morrison where he entered into partnership with H. Sobbe to grow nursery stock and cultivate grapes. At this time much dissatisfaction was felt among the grape-growers of the Middle West with the standard varieties then grown, most of which were table grapes secured from the East, and were poorly adapted to wine-making and to Missouri conditions. To remedy this defect Rommel originated many new varieties, using Taylor chiefly as a parent. Among others he produced Amber, Beauty, Black Delaware, Elvira, Etta, Faith, Montefiore, Pearl, Transparent and Wilding. Rommel's seedlings are characterized by extreme vigor and productiveness. They were not designed for table grapes and they lack the qualities to recommend them as such. In 1900 Rommel retired from business and removed to Chamois, Missouri, where he still lives.

MONTEFIORE

MOORE EARLY

average three, small, broad, faintly notched, short, plump, brownish; raphe obscure; chalaza intermediate in size, slightly above center to central, oval to nearly circular, somewhat obscure. Must 90°.

MOORE EARLY.

(Labrusca.)

1. *Mass. Hort. Soc. Rpt.*, 1871:43. 2. *Ib.*, 1872:94. 3. *Ib.*, 1873:101. 4. *Ib.*, Pt. 2:81, 82, 109. 1877. 5. *Am. Pom. Soc. Rpt.*, 1881:32, 40, 41. 6. *Am. Pom. Soc. Cat.*, 1881:24. 7. *Mich. Pom. Soc. Rpt.*, 1886:225. 8. *Am. Pom. Soc. Rpt.*, 1887:97. 9. *N. Y. Sta. An. Rpt.*, 9:327. 1890. 10. *Can. Hort.*, 15:95. 1892. *col. pl.* 11. *Ia. Hort. Soc. Rpt.*, 1893:161. 12. *Bush. Cat.*, 1894: 158. *fig.* 13. *Col. Sta. Bul.*, 29:19. 1894. 14. *Tenn. Sta. Bul.*, Vol. 9:184, 195. 1896. 15. *N. Y. Sta. An. Rpt.*, 15:430, 431, 432, 433. 1896. 16. *Vt. Sta. Bul.*, 62:41. 1898. 17. *N. Y. Sta. An. Rpt.*, 17:533, 541, 543, 544, 545, 547, 552. 1898. 18. *Mich. Sta. Bul.*, 169:173. 1899. 19. *Rural N. Y.*, 66:173. 1907.

Moore Early is the standard grape of its season in New York. It cannot be better described than as an early Concord. It comes in season from two to three weeks earlier than Concord and the last fruits of it are sent to market before those of the later grape are picked. The vines are readily recognizable from those of Concord, differing chiefly in being less productive and more precarious bearers. To grow the variety satisfactorily the soil must be rich, well drained and loose, must be frequently cultivated and the vines should be carefully pruned and cared for in every way. The bunches of Moore Early are not as large as those of Concord and are more inclined to looseness, and the berries sometimes shell rather badly. The berries are larger and, as with Concord, crack under unfavorable conditions. The flesh characters and the flavor are essentially those of Concord, though the quality, representing all of the characters which make a fruit pleasant to the palate, is not as high as in the older variety; it is however much higher than that of Champion and Hartford, its chief competitors in this State and varieties which it should replace. Moore Early is by no means an ideal grape for its season but until something better is introduced it will probably remain the best early commercial grape for New York.

Captain John B. Moore of Concord, Massachusetts, is said to have originated this variety from seed of Concord. In 1871 it was exhibited before the Massachusetts Horticultural Society with fifty other seedlings of the same parentage. It was awarded a first class certificate of merit

by this Society in 1877, and was introduced by the originator the same year. In 1881 Moore Early was placed on the grape list of the American Pomological Society fruit catalog where it still remains.

Vine medium to vigorous, hardy, not a heavy yielder. Canes medium to short, of average number, medium to below in thickness, rather dark reddish-brown, surface slightly roughened; nodes enlarged, flattened; internodes short to medium; diaphragm thinnish; pith intermediate in size; shoots pubescent; tendrils continuous, of fair length, bifid to trifid.

Leaf-buds small and slender, short, pointed to conical, open medium early. Young leaves tinged on lower side and along margin of upper side with rose-carmine. Leaves large to medium, thick; upper surface medium dark green, dull, of average smoothness; lower surface tinged with bronze, heavily pubescent; veins distinct; leaf usually not lobed, with terminus acute; petiolar sinus of average depth, wide to medium; basal sinus lacking; lateral sinus a notch when present; teeth shallow, narrow to medium. Flowers fertile, open in mid-season; stamens upright.

Fruit ripens from two to three weeks earlier than Concord, does not keep well. Clusters intermediate in size, length, and breadth, irregularly cylindrical to tapering, sometimes single-shouldered, inclined to looseness; peduncle short to medium, thick; pedicel short, thick, nearly smooth; brush short, pale green. Berries large to above medium, roundish, dark purplish-black to black, covered with abundant blue bloom, not very persistent, nearly firm. Skin intermediate in thickness, tender, adherent to the pulp, contains dark purplish-red pigment, not astringent. Flesh greenish, translucent, juicy, fine-grained and tough, with slight foxiness, sweet next the skin but somewhat acid at center, fair to good in quality. Seeds adherent, one to four, average two and three, large, often irregular in shape, broad and plump, blunt, brown with yellow tinge at tips; raphe buried in a small and indistinct groove; chalaza of average size, obscure, often showing as a faint, irregular depression.

MOYER.

(Labrusca, Bourquiniana.)

1. *Columbus Hort. Soc. Rpt.*, 1887:218. 2. *Ib.*, 1887:218. 3. *Can. Hort.*, 11:265. 1888. *col. pl.* 4. *W. N. Y. Hort. Soc. Rpt.*, 35:176. 1890. 5. *Ib.*, 36:42. 1891. 6. *Ill. Sta. Bul.*, 28:261. 1893. 7. *Bush. Cat.*, 1894:159. 8. *Can. Hort.*, 22:386. 1899. *fig.* 9. *Mo. Sta. Bul.*, 46:40, 42. 1899. 10. *Ont. Fr. Exp. Stas. Rpt.*, 6:20. 1899. *fig.* 11. *Am. Pom. Soc. Cat.*, 1899:29.

Jordan (2). *Jordan* (5, 7). Moyer's Early Red (1).

Moyer at its best is almost a counterpart of its parent Delaware. It has all of the faults of Delaware and some added ones. Were it not for the fact that the variety is from one to two weeks earlier than its parent, and somewhat hardier, hence better adapted for colder regions, it could not

MOYER

have received the recognition given it by viticulturists. As compared with Delaware, it is hardly as vigorous and is less productive. It is reputed to be more free from rot and mildew, the latter especially. The bunches are much like those of Delaware but with the fault of setting fruit imperfectly oftentimes even when cross-pollination is insured. The berries are a little larger but of much the same color and of like flavor, rich, sweet, and with pure vinousness without a trace of foxiness but withal not of so high quality as Delaware. The fruit keeps well, ships well, and does not crack nor shell in New York. Moyer is well established in Canada, where it originated, and is highly thought of, proving perfectly hardy wherever the Concord is grown and possibly standing even more cold. Its place is as an early Delaware for northern regions.

W. H. Read of Port Dalhousie, Lincoln County, Ontario, raised the original vine of Moyer about 1880, from seed of Delaware fertilized by Miller's Burgundy. It was named after Allan Moyer of St. Catharines, Ontario, who introduced the variety in 1888. Moyer was placed on the grape list of the American Pomological Society fruit catalog in 1899.

Vine vigorous to medium, hardy, healthy, not productive. Canes intermediate in length, numerous, medium to slender, rather dull dark reddish-brown; nodes slightly enlarged, flattened; internodes short to medium; diaphragm thin; pith medium to below in size; shoots pubescent; tendrils continuous, medium to rather long, bifid to trifid.

Leaf-buds of about average size and thickness, short, conical to rather obtuse, open very late. Young leaves tinged on under side and along margin of upper side with rose-carmine. Leaves small to medium, of average thickness; upper surface dark green, dull and smooth; lower surface very pale green or with faint blue tinge, heavily pubescent; lobes two to five with terminus acute; petiolar sinus shallow to medium, not narrow; basal sinus usually lacking, but shallow when present; lateral sinus shallow, narrow; teeth very shallow, medium to narrow. Flowers sterile, open early; stamens reflexed.

Fruit ripens from one to two weeks earlier than Delaware, keeps well but loses its color if kept too long. Clusters medium to small, short and slender, irregularly tapering, sometimes single-shouldered, medium in compactness; peduncle intermediate in length, somewhat slender; pedicel inclined to short, of average thickness, covered with very small warts; brush yellowish-green. Berries medium to small, oblate, dark red covered with dark lilac to faint blue bloom, persistent, rather firm. Skin intermediate in thickness, not tender, does not adhere to the pulp, astringent. Flesh light green, translucent, juicy, rather tender, fine-grained, somewhat vinous, good to very good. Seeds separate

easily from the pulp, one to four, average two or three, intermediate in size, broad, short, very blunt, brown with yellow tinge at tips; raphe obscure; chalaza of fair size, slightly above center, irregularly circular, obscure.

MUSCAT HAMBURG.

(Vinifera.)

1. *Gar. Chron.*, 1857:645. 2. *Horticulturist*, 13:167. 1858. 3. *Ib.*, 14:95. 1859. 4. *Am. Pom. Soc. Rpt.*, 1862:92. 5. *Gar. Mon.*, 9:285. 1867.

As one of the parents of a number of valuable hybrids cultivated in American vineyards, Muscat Hamburg is illustrated and described in *The Grapes of New York*. It is described below in detail that grape-breeders may detect any of its characters transmitted to its offspring. The grapes and vines described here were grown under glass, as the variety cannot be grown out of doors in eastern America.

Muscat Hamburg is a forcing grape only and is apparently unknown in the grape-growing districts of Europe. It is said to grow better grafted on Black Hamburg than on its own roots.

Seward Snow of Wrest Park, Bedfordshire, England, originated Muscat Hamburg more than a half century ago from seed of Black Hamburg fertilized by White Muscat of Alexandria. It was placed on the grape list of the American Pomological Society fruit catalog for 1862 as an exotic recommended for growing under glass.

Vine very vigorous, tender, productive. Canes long, numerous, slender to medium, light brown, slightly darker at nodes which are enlarged and somewhat flattened; internodes short to medium; diaphragm thick; pith nearly large; shoots glabrous; tendrils inclined to dehisce early, intermittent or frequently with only one tendril present with vacancy on either side, long, bifid to trifid.

Leaf-buds large, long to medium, inclined to thick. Leaves medium to large, intermediate in thickness; upper surface light green, dull, somewhat smooth; lower surface slightly lighter green than upper surface, faintly pubescent, densely hairy; lobes usually five with terminus acute to acuminate; petiolar sinus of average depth, medium to narrow, rarely closed or overlapping; basal sinus intermediate in depth; lateral sinus deep; teeth very irregular in depth and width, some teeth approaching a tendency to lobing.

Fruit ripens the latter part of October under glass, keeps unusually well. Clusters very large to medium, long, broad, tapering, frequently single-shouldered but sometimes double-shouldered, rather loose; peduncle intermediate in length, medium to rather

MUSCAT HAMBURG (Reduced Size)

thick; pedicel of average length and thickness, very much enlarged at point of attachment to fruit. Berries large to below medium, oval, dark red, rather dull, covered with lilac bloom, very persistent, of average firmness. Skin medium to thick, adheres strongly to the pulp, contains no pigment, not astringent. Flesh pale green, translucent, very juicy, fine-grained, tender, vinous, sweet, very good to best in quality. Seeds separate easily from the pulp, one to four, average two, large to medium, long and broad, sharply pointed, brownish; raphe hidden in a shallow, broad groove; chalaza intermediate in size, decidedly above center, pear-shaped, distinct.

NAOMI.

(Vinifera, Riparia, Labrusca.)

1. *Gar. Mon.*, 22:176. 1880. 2. *Ohio Hort. Soc. Rpt.*, 1882–3:46. 3. *Bush. Cat.*, 1883:124. *fig.* 4. *Can. Hort.*, 11:287. 1888. 5. *Kan. Sta. Bul.*, 14:90. 1890. 6. *Tex. Sta. Bul.*, 48:1151, 1160. 1898.

Naomi is one of Ricketts' seedlings and, according to the originator, one of the finest of all his score or more of worthy grapes. But viticulturists have never agreed with the producer of Naomi in his estimate of it and the variety is now scarcely known. So far as New York is concerned, Naomi has been discarded because it ripens too late for this latitude and is very subject to mildew. Moreover, grapes of its color are not as highly esteemed as red or black grapes and the demand for green grapes does not sustain the varieties we have of this color.

This variety was originated by J. H. Ricketts of Newburgh, New York, from seed of Clinton fertilized with Muscat Hamburg. It was first exhibited before the American Pomological Society in 1879. It has not been widely disseminated.

Vine vigorous, hardy, variable in productiveness. Canes very long to medium, numerous, not uniform in size, medium dark brown deepening in color at the nodes; tendrils intermittent, bifid. Leaves large to below medium, thin, frequently inclined to be torn by heavy winds, medium green; lower surface pale green, slightly pubescent. Stamens upright. Fruit ripens late. Clusters large to above medium, above average in length, broad to medium, single-shouldered to sometimes double-shouldered, compact. Berries intermediate in size, roundish to oval, light green, occasionally with reddish-yellow tinge, glossy, covered with thin gray bloom, persistent. Skin moderately thick, tough, not astringent. Flesh greenish, juicy, slightly tough and solid, aromatic, sweet at skin to tart at center, good in quality when fully ripened. Seeds medium to below in size, elongated, sharp-pointed.

NECTAR.

(Labrusca, Bourquiniana, Vinifera?)

1. *Am. Pom. Soc. Rpt.*, 1883:92. 2. *Ib.*, 1885:108. 3. *Ohio Hort. Soc. Rpt.*, 1888–9:107. 4. *Ohio Hort. Soc. Adv. Rpt.*, 1890:22. 5. *Bush. Cat.*, 1894:160. 6. *Ohio Hort. Soc. Rpt.*, 1894–5:12. 7. *Del. Sta. An. Rpt.*, 7:134, 136. 1895. 8. Husmann, 1895:94. 9. *Mass. Hatch Sta. Bul.*, 37:11, 14. 1896. 10. *N. Y. Sta. An. Rpt.*, 17:533, 548, 556, 559. 1898. 11. *Am. Pom. Soc. Cat.*, 1899:29. 12. *Miss. Sta. Bul.*, 56:16. 1899. 13. *Kan. Sta. Bul.*, 110:242. 1902. 14. *Rural N. Y.*, 61:685, *fig.*, 690. 1902.

Black Delaware (1, 2, 5, 6, 7, 9).

There are either two varieties under the supposedly synonymous names, Nectar and Black Delaware, or else this variety varies greatly in different localities. Reports from different sources give the vigor as from weak to vigorous, the hardiness from hardy to tender, the season from earlier than Moore Early to later than Concord, the size of berry from small to large, the productiveness from unproductive to productive to a fault.

The Nectar vines at this Station were secured from Caywood, the originator, in 1888, and from the T. S. Hubbard Company, in 1883. Vines from both sources are vigorous, small-leaved, bearing medium-sized black berries of good but not high quality. These vines are nearly worthless on account of their susceptibility to mildew. The resemblance to Delaware is not apparent.

We have received from Massachusetts, under the name Black Delaware, and there is described in several publications, a grape which is strikingly like Delaware except that the color is black. It is a grape of high quality, and the vine is described as being resistant to mildew. This variety may be worth something. The Nectar on the Station grounds is not. Possibly Nectar and Rommel's Black Delaware have been confused.

The variety here described was originated by Caywood. It is said to be from seed of Concord fertilized by Delaware. Nectar first became known to the public about 1880 under the name Black Delaware, which was afterward changed by Caywood to Nectar. It was placed on the grape list of the American Pomological Society fruit catalog in 1899, as a recommended variety.

Vine medium to vigorous, not always hardy, usually produces light crops, very susceptible to attacks of mildew. Canes long, of average number, thick, surface rough-

NECTAR

ened, dark reddish-brown; nodes enlarged, flattened; internodes variable in length, of medium thickness; pith intermediate in size; shoots pubescent; tendrils intermittent to continuous, long, trifid.

Leaf-buds medium to above in size, short and thick, open in mid-season. Young leaves faintly tinged on under side and along margin of upper side with rose-carmine. Leaves small to medium, thick; upper surface dark green, rugose, often heavily wrinkled; lower surface dull whitish or light gray, strongly pubescent; veins distinct; lobes three to five with terminus obtuse to acute; petiolar sinus medium in depth, wide; basal sinus shallow and open when present; lateral sinus medium to deep, often wide; teeth very shallow, medium to narrow. Flowers partly self-fertile, open moderately late; stamens upright.

Fruit ripens about with Concord, does not keep long in good condition. Clusters intermediate in size, length, and thickness, irregularly cylindrical to tapering, often single-shouldered but sometimes double-shouldered, medium to compact; peduncle variable in length, slender to medium; pedicel medium to short, slender, smooth; brush yellowish-green. Berries intermediate in size, roundish, dark purplish-black, dull, covered with heavy blue bloom, not very persistent, soft. Skin of average thickness, medium to somewhat thin, adheres considerably to the pulp, with wine-colored pigment, slightly astringent. Flesh pale yellowish-green, translucent, juicy, tough, fine-grained, vinous, sweet next the skin but quite acid at the center, good to very good in quality. Seeds rather adherent, one to four, usually three, intermediate in size, medium to long, brownish; raphe obscure; chalaza of average size, much depressed, strongly above center, circular, obscure.

NIAGARA.

(Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, 1879:161. 2. *Mich. Pom. Soc. Rpt.*, 1879:194, 323. *fig.* 3. *Mass. Hort. Soc. Rpt.*, 1880:240, 254. 4. *N. J. Hort. Soc. Rpt.*, 1881:9. 5. *Am. Pom. Soc. Rpt.*, 1881:46. 6. *Bush. Cat.*, 1883:124. 7. *Am. Pom. Soc. Cat.*, 1885:26. 8. *Minn. Hort. Soc. Rpt.*, 1886:134, 136. 9. *Mo. Hort. Soc. Rpt.*, 1889:370. 10. *Rural N. Y.*, 48:18, 19. 1889. *figs.* 11. *Kan. Sta. Bul.*, 14:90. 1890. 12. *Minn. Hort. Soc. Rpt.*, 1891:220. 13. *Rural N. Y.*, 50:66, 230. 1891. 14. *Ill. Sta. Bul.*, 28:265. 1893. 15. *Bush. Cat.*, 1894:161. 16. *N. Y. Sta. An. Rpt.*, 15:430, 431, 432, 433. 1896. 17. *Ib.*, 17:533, 547, 552. 1898. 18. *Mo. Sta. Bul.*, 46:40, 44, 45. 1899. 19. *Mich. Sta. Bul.*, 169:173. 1899. 20. *Ala. Sta. Bul.*, 110:70, 87. 1900. 21. *N. C. Sta. Bul.*, 187:60. 1903. 22. *Mich. Hort. Soc. Rpt.*, 1903:30.

Niagara is the leading American green grape, holding the rank among grapes of this color that Concord does among the black varieties. It is, however, a less valuable grape than Concord, and all in all, it is doubtful if it should be ranked much if any higher than several others of the green grapes with which it must compete. Much of the popularity of Niagara

is due to the novel way in which the variety was sold to the public. For many years after its origin, the entire stock of this grape was owned by the Niagara Grape Company, who retained all of the propagating wood, and in many instances well guarded interests in the vineyards of this variety. The advantages gained by this method of distribution enabled the promoters of the variety to advertise it to an extent not equaled in the dissemination of any other grape. As is likely to be the case with new fruits, Niagara was overpraised by the company selling it and for a time by the horticultural press and viticulturists as well. When vineyards of the variety came into bearing, a reaction set in, and Niagara lost in popularity; many who had planted it condemned it and oftentimes unjustly. For years the reports for and against it were more or less colored by personalities and it has not been until a comparatively recent day that a just estimate of the variety could be obtained from grape-growers.

Since one of the parents of Niagara is Concord, and since the two grapes are largely grown in the same regions and for the same general markets, and chiefly as table grapes, we may best arrive at the status of Niagara by comparing it with Concord.

In vigor and productiveness, where the two grapes are upon equal footing as to adaptability, Niagara and Concord rank the same. In these respects both are standards scarcely surpassed among our cultivated native grapes. In hardiness of root and vine Niagara falls somewhat short of Concord; practically all grape-growers who have tested the two varieties in cold climates agree as to the greater hardiness of Concord. In some of the grape regions of New York Niagara is not grown profitably because of its susceptibility to cold. The variety cannot be relied upon without winter protection where the thermometer falls much below zero. Like Concord the Niagara has much of the foxiness of the wild Labrusca, distasteful to many palates. On the other hand there are many Americans who really like the foxy taste and aroma and count it an asset in these varieties. The foxiness of Niagara is most marked just after the fruit is picked, and it is usually better flavored after having stood for a few days. The flavor is not at its best unless the grapes be fully ripe. Both bunches and berries of Niagara are larger than those of Concord and are better formed, making a handsomer fruit if the colors are liked

NIAGARA

equally well. The skin of Niagara does not crack as easily as that of Concord. The fruit shells as badly and does not keep much, if any, longer. Both vines and fruits of Niagara are more susceptible to fungal diseases than are those of Concord and especially to black-rot, which proves a veritable scourge with this variety in unfavorable seasons and localities.

It is likely that Niagara will continue for some time to be the leading green grape for the market. As long as grape consumers demand a showy grape to be had at a low price, and without much regard as to quality, if the grape be passably good, Niagara will be popular. For those who rank quality first, with appearance and reasonable cost as secondary consideration, there are other green grapes superior.

Niagara was produced by C. L. Hoag and B. W. Clark of Lockport, Niagara County, New York. The originators state that the variety was grown from seed of Concord fertilized by Cassady, planted in 1868, and that it fruited for the first time in 1872. It was introduced about 1882 by the Niagara Grape Company. In 1885 it was placed on the grape list of the fruit catalog of the American Pomological Society. Niagara has attained its greatest popularity and is most grown in New York and in the North. In the grape regions of the South and Southwest, it is too susceptible to fungi especially the mildews and black-rot. It is said that the quality of the variety, however, is improved as grown to the southward and that where comparatively free from diseases, or when they are controlled by spraying, it becomes a profitable early market grape. In Ohio, Niagara is grown more or less for wine. This variety is a typical white seedling of Concord showing little trace of any other variety.

Vine vigorous to medium, less hardy than Concord, productive to very productive, somewhat subject to mildew and black-rot in unfavorable locations. Canes medium to long, of average number, thick, dark reddish-brown deepening in color at the nodes which are strongly enlarged and slightly flattened; internodes medium to long, thick; pith large to medium; shoots pubescent; tendrils continuous, long, bifid to trifid.

Leaf-buds medium in size and thickness, short, slightly compressed, conical to pointed, open in mid-season. Young leaves lightly tinged on under side and along margin of upper side with rose-carmine. Leaves medium to large, thick; upper surface glossy, medium dark green, rather smooth; lower surface pale green, pubescent; veins distinct; lobes three to five with terminus acute to acuminate; petiolar sinus intermediate in depth and width; basal sinus shallow, wide, often toothed; lateral sinus of mean

depth, wide, frequently toothed; teeth shallow, variable in width. Flowers fertile, open in mid-season; stamens upright

Fruit ripens about with Concord, keeps fairly well. Clusters large to medium, long to medium, somewhat broad, tapering to often cylindrical, frequently single-shouldered, moderately compact; peduncle short to medium, thick; pedicel intermediate in length, thick, covered with few, small, inconspicuous warts; brush pale green, medium to long. Berries above medium to large, slightly oval, light green changing to a pale yellowish-green tinge as the ripening season advances, covered with thin g ay bloom, persistent, firm. Skin thin, tender, adheres somewhat to the pulp, contains no pigment, slightly astringent. Flesh light green, translucent, juicy, fine-grained, moderately tender, foxy, sweet next the skin to agreeably tart at center, as good or better than Concord in quality. Seeds separate rather easily from the pulp, one to six, average three, intermediate in size, length and breadth, deeply notched, brownish; raphe buried in a deep groove; chalaza of fair size, above center, circular to oval, moderately distinct.

NOAH.

(Riparia, Labrusca.)

1. *Gar. Mon.*, 22:176. 1880. 2. *Am. Pom. Soc. Cat.*, 1881:24. 3. *Am. Pom. Soc. Rpt.*, 1883:58. 4. *Mo. Hort. Soc. Rpt.*, 1883:40, 185. 5. *Ib.*, 1884:217. 6. *N. Y. Sta. An. Rpt.*, 11:631. 1892. 7. *Ill. Sta. Bul.*, 28:265. 1893. 8. *Bush. Cat.*, 1894:162. *fig.* 9. *N. Y. Sta. An. Rpt.*, 17:548, 556, 559. 1898. 10. *Tex. Sta. Bul.*, 48:1151, 1160. 1898. 11. *Mo. Sta. Bul.*, 46:40, 43, 44, 45. 1899. 12. *Traite gen. de vit.*, 5:171. 1903.

For some years after its introduction in 1876, Noah was quite popular on account of its vigor, supposed health, productiveness, and the high alcoholic content of its wine. It is now, however, but little grown outside of Missouri where it is still used somewhat in wine-making. In France Noah was largely grown for a time both as a stock for grafting and as a direct producer for the making of wine and brandy. Probably no other American grape has caused more general discussion, or received more praise and more condemnation in France, with the result that it is now but little grown. The name was given the variety on account of the alcoholic strength of its wine, the originator holding that the lamentable accident which befell the patriarch Noah could easily have happened had he partaken of the wine of this grape.

Noah is so like Elvira that the two are often confused. There are, however, very marked differences in the vine characters; and the clusters of Elvira are smaller, the berries more foxy in taste and the skins more tender and crack much more than do those of Noah. The large, dark,

NOAH

glossy green leaves make the vines of this variety very handsome and a vineyard of them is a pleasing sight. As with Elvira, Othello, Rommel, and other varieties of this group of grapes, Noah is of little value in New York. These grapes are fit only for wine but the wine-makers in this State seem not to have found them desirable for their wants. Noah shatters badly and does not keep nor ship at all well, and buyers therefore do not care for it.

Noah was originated by Otto Wasserzieher of Nauvoo, Illinois, from seed of Taylor planted in 1869, and fruited for the first time in 1873. It was exhibited before the American Pomological Society in 1879. It was placed on the grape list of the American Pomological Society fruit catalog in 1881. Noah shows, like its parent, characters of both Riparia and Labrusca. The vine characters are markedly those of Riparia and, among others of these, the healthiness of the foliage is an asset of the variety; the Labrusca shows more plainly in the fruit of Noah than in that of Taylor, the berries being larger and having more of the foxiness than the last named variety.

Vine medium to sometimes vigorous, not hardy in severe winters, productive, susceptible to attacks of mildew. Canes long, of average number, thick to medium, dark brown, surface roughened; nodes enlarged, flattened; internodes intermediate in length; diaphragm of mean thickness; pith medium in size; shoots slightly pubescent; tendrils usually continuous, of average length, bifid to trifid.

Leaf-buds medium to small, very short, thick to medium, somewhat compressed, obtuse, open very late. Young leaves faintly tinged on under side and along margin of upper side with rose-carmine. Leaves large to medium, of average thickness; upper surface dark green, glossy, smooth; lower surface pale green, thinly pubescent; veins distinct; leaf usually not lobed, with terminus acuminate; petiolar sinus deep to medium, rather wide; basal sinus lacking; lateral sinus very shallow when present; teeth somewhat shallow, moderately wide. Flowers sterile to semi-fertile, open early; stamens upright.

Fruit ripens with Concord or later, does not ship nor keep well. Clusters variable in size and length, above average breadth, cylindrical to nearly tapering, usually single-shouldered, medium to compact; peduncle intermediate in length, thick; pedicel short to medium, covered with few, small warts; brush medium to short, brownish. Berries small, usually roundish, light green tinged with yellow, somewhat dull, covered with thin gray bloom, not persistent, nearly firm. Skin variable in thickness and tenderness, adheres to the pulp, contains no pigment, not astringent. Flesh yellowish-green, trans-

lucent, juicy, tough, fine-grained, vinous, tart at skin to acid at center, sprightly, good in quality. Seeds separate with difficulty from the pulp, one to four, average two or three, intermediate in size and breadth, rather dark brown; raphe buried in a shallow groove; chalaza of average size, slightly above center, oval, obscure. Must 100°.

NORFOLK.

(Labrusca, Vinifera.

1. *Mass. Hort. Soc. Rpt.*, **1872**:95. 2. *Ib.*, Pt. 2:120. 1875. 3. *Kan. Sta. Bul.*, **28**:164. 1891. 4. *Ill. Sta. Bul.*, **28**:261. 1893. 5. *Bush. Cat.*, **1894**:163, 186. 6. *Del. Sta. An. Rpt.*, **7**:135, 139. 1895. 7. *N. Y. Sta. An. Rpt.*, **17**:533, 548. 1898. 8. *Va. Sta. Bul.*, **94**:138. 1898. 9. *Mo. Sta. Bul.*, **46**: 40, 42, 44, 46, 51. 1899.

Norfolk Muscat (1, 2).

Norfolk was disseminated as an early Catawba and it resembles that variety very much in appearance and somewhat in flavor, but ripens much earlier. Unlike the Catawba too, the fruit does not keep well, nor is the flavor quite up to the high quality of the older variety, more nearly resembling, as it grows here, that of Agawam. It is not, however, the fruit characters so much as those of the vine that have kept Norfolk from becoming popular. It falls short in several vine characters, chiefly in productiveness, and after having been known for many years is now scarcely cultivated.

N. B. White[1] of Norwood, Massachusetts, originated this variety some time in the sixties from seed of a native Labrusca fertilized with Black Hamburg.

Vine medium to vigorous, usually hardy, variable in productiveness. Canes long, numerous, thick; tendrils usually intermittent, bifid to trifid. Leaves large to medium, moderately light green, thick; lower surface grayish-white with tinge of bronze, pubescent. Flowers nearly fertile, open early; stamens upright. Fruit ripens earlier than Concord, does not keep very well. Clusters medium to small, often broad, tapering, usually with a long single shoulder, loose. Berries large to medium, oval to roundish,

[1] Nelson Bonney White was born in the town of Putney, Windham County, Vermont, in 1824. During his younger years he lived for a time in Ohio and in New York but finally settled in Norwood, Massachusetts. White was a cabinet maker by trade, but coming under the influence of E. S. Rogers at the time when Rogers' hybrids were causing a stir in New England, he took up grape-breeding as a pastime. He is probably the oldest grape-breeder of note now alive, as he has been engaged in this occupation over fifty years. His best known productions are August Giant, Amber Queen, and Norfolk. Two other of his varieties, International and King Philip, are very highly spoken of but have not yet been distributed.

dark purplish-red somewhat resembling Catawba, covered with a fair amount of dark lilac or faint blue bloom, shatter, rather soft. Skin thin, inclined to tender, astringent. Flesh somewhat tough, stringy, rather coarse, vinous, sweet at skin to acid at center, fair in quality. Seeds adhere to the pulp, numerous, quite large, long to medium, distinctly notched.

NORTHERN MUSCADINE.

(Labrusca.)

1. *Horticulturist*, 9:518. 1854. 2. *U. S. Pat. Off. Rpt.*, 1854:315. 3. *Mag. Hort.*, 22:25. 1856. 4. *Am. Pom. Soc. Rpt.*, 1856:166. 5. *Ib.*, 1862:143. 6. *Am. Pom. Soc. Cat.*, 1862:90. 7. Phin, 1862:259. 8. *Minn. Hort. Soc. Rpt.*, 1877:59. 9. *Bush. Cat.*, 1883:126. 10. *N. Y. Sta. An. Rpt.*, 17:533, 548, 556. 1898. 11. *Tex. Sta. Bul.*, 48:1151, 1160. 1898. 12. *Mo. Sta. Bul.*, 46:40, 42, 44, 46. 1899.

Early Northern Muscadine (2, 7).

To those who profess to like a foxy grape, the Northern Muscadine should be the grape *par excellence*. Many of the differences in opinion to be found in grape literature regarding the quality of grapes have hinged upon whether foxiness in taste and aroma is liked or not. Thus some horticulturists put Northern Muscadine, both for the table and for wine, well toward the head of the list of American grapes, while others condemn it as unfit to eat. The fact that this variety, with Lucile, Lutie, and others with the foxy taste strongly marked, has not become popular, in spite of particularly good vine characters, is presumptive evidence that the American public do not want such grapes. In appearance of fruit Northern Muscadine is much like Lutie, and much like it in quality, the two being distinguished from most other grapes by an unmistakable odor. A serious defect of the fruit is that the berries shatter badly as soon as the grape reaches maturity. Taken as a whole, the vine characters of this variety are very good and it offers possibilities for the grape-breeder because of them. It cannot be recommended for either the vineyard or the garden.

This variety originated at New Lebanon, Columbia County, New York. It was first brought to notice by D. J. Hawkins and Philemon Stewart of the United Society of Shakers at that place about 1852. It was placed on the grape list of the American Pomological Society fruit catalog in 1862 and dropped in 1871. It is a typical red Labrusca in all of its characters.

Vine variable in vigor and productiveness, healthy, not always hardy. Canes intermediate in length and number, medium to slender, dark brown, sometimes with a a slight red tinge, heavily pubescent; tendrils continuous, bifid, dehisce early. Leaves medium to very large and of distinct Labrusca type, inclined to roundish, thick; upper surface of medium greenness, dull, medium to rugose; lower surface dark bronze, heavily pubescent; veins well defined. Flowers fertile to sterile, open in mid-season or earlier; stamens upright.

Fruit ripens about with Worden, does not keep well. Clusters medium to small, short, of average width, frequently oval but sometimes roundish, occasionally single-shouldered, medium to compact. Berries medium to large, roundish to oval, dark amber to dull brownish-red, covered with thin gray bloom, drop badly from pedicel. Skin variable in thickness, medium to tough, adheres considerably to the pulp, contains little or no pigment, slightly astringent. Flesh very pale green, juicy, fine-grained, tender and soft, unusually foxy, sweet, poor in quality. Seeds separate easily from the pulp, often numerous, large, broad, faintly notched, long, not blunt, brownish; raphe obscure; chalaza of average size, slightly above center, variable in shape, often showing as an obscure depression.

NORTON.

(Aestivalis, Labrusca.)

1. Prince, **1830**:186. 2. *U. S. Pat. Off. Rpt.*, **1845**:939. 3. *Horticulturist*, **12**:461. 1857. 4. *Am. Pom. Soc. Rpt.*, **1858**:68. 5. *Ib.*, **1860**:88. 6. *Horticulturist*, **16**:16, 286. 1861. 7. *U. S. Pat. Off. Rpt.*, **1865**:197. 8. *Horticulturist*, **20**:39. 1865. 9. Husmann, **1866**:19, 48, 85, 87, *fig.*, 98. 10. *Horticulturist*, **22**:355. 1867. 11. *Am. Pom. Soc. Cat.*, **1867**:44. 12. *Am. Pom. Soc. Rpt.*, **1867**:111. 13. *Grape Cult.*, 1:5, 74, 98, 122, 138, 150, 212, 296. 1869. 14. *Bush. Cat.*, **1883**:126. 15. *Am. Pom. Soc. Rpt.*, **1885**:100. 16. *Ib.*, **1889**:109. 17. *Mo. Hort. Soc. Rpt.*, **1891**: 131. 18. *Am. Gard.*, **20**:688. 1899. 19. *Mo. Sta. Bul.*, **46**:40, 43, 45, 51, 54. 1899. 20. *N. Y. Sta. An. Rpt.*, **18**:397. 1899. 21. *Mo. Hort. Soc. Rpt.*, **1905**:59.

Norton's Seedling (9). NORTON'S VIRGINIA (3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 21). *Norton's Virginia* (14, 18). NORTON'S VIRGINIA SEEDLING (1, 2, 4). *Virginia Seedling* (9, 13).

Norton is the leading wine grape in eastern America, and, if we except Cynthiana, which can hardly be told from it, the wine made from it is the best of its class made in the regions in which the variety will grow. The fruit is of small value for any other purpose than wine. Norton is fairly hardy but requires a long warm season to reach maturity. While it is said that it may be grown wherever Catawba thrives, this has not proved to be the case in New York; Norton in this State is far more precarious than Catawba in maturity, so much so that it is now scarcely grown even in the most favored parts of New York. It has great adaptability to soils and thrives in rich alluvials or clays, gravels or sands, the only requisite seem-

NORTON

ingly being a fair amount of fertility and soil warmth. The vines are robust, very productive, especially on fertile soils, as free, or more so, from fungal diseases than any others of our native grapes, and very resistant to phylloxera.

The bunches of Norton are of medium size, not averaging nearly as large as the one shown in the illustration, and the berries are small; the fruit is not at all attractive in appearance. The grapes are pleasant eating when fully ripe, rich and spicy, and pure-flavored but tart if not quite ripe; but still are in no sense table grapes. The fruit keeps well. The cluster usually ripens evenly and the berries neither shatter nor crack. The variety is difficult to propagate from cuttings and to transplant, and the vines do not bear grafts readily.

Norton has been used to quite an extent in breeding work and the blood may be found in a number of desirable grapes but it is not a prolific parent of worthy grapes as has been the case with so many of its contemporary varieties. Like Concord, Norton gives, in experimental work, many white seedlings.

The origin of Norton is rather uncertain. In 1830 Prince writes that he received the grape from Dr. D. N. Norton, one of the pioneer grape-growers of Richmond, Virginia, who had originated it from the seed of Bland with Miller's Burgundy growing nearby. This parentage, it appeared later, was undoubtedly an error as the Norton shows none of the characters of either Bland or Miller's Burgundy. Prince's description leaves little doubt but that his Norton was the Norton of to-day. In 1861 there was an article published in the *Horticulturist*[1] by a Mr. Lemosy saying that the original Norton vine had been discovered in 1835 by his father, Dr. F. A. Lemosy of Richmond, Virginia, on an island in the James River and that Dr. Norton secured the variety from this source. Since Norton had sent this variety to Prince prior to 1830, this story is evidently wrong as to dates and is suspicious as to facts. It is probable that the true history of the variety will never be known. Many grapes of the Norton class have been found at the South, a fact which has led to much confusion as to the origin of varieties as well as in the varieties themselves. Grapes of the Norton

[1] *Horticulturist*, **16**:286. 1861.

type were not looked upon with favor by the early viticulturists and it was not until some years after its introduction that the variety was widely planted—and then in Missouri and not in the region of its origin. The Norton was placed on the grape list of the American Pomological Society fruit catalog in 1867, and is yet retained.

This variety has been usually classed as Aestivalis, which is approximately correct although most viticulturists agree that there is a strain of Labrusca present as indicated by the occasional continuity of tendrils. Millardet, of France, believes that the variety may contain a strain of Cinerea as well. But in fruit at least, Norton is essentially a variety of Aestivalis.

Vine very vigorous, healthy, usually hardy but sometimes half-hardy, an uncertain bearer at this Station but producing heavy crops in more southern localities. Canes long, of average number, thick to medium, dark brown to reddish-brown, surface covered with considerable blue bloom; nodes much enlarged; internodes medium to long; diaphragm thick; pith large to medium; shoots pubescent; tendrils intermittent, occasionally continuous, long, bifid to sometimes trifid.

Leaf-buds above average size and thickness, short to medium, often compressed, obtuse to conical, open late. Young leaves considerably tinged on upper and under sides with bright carmine. Leaves medium to large, irregularly roundish, of average thickness; upper surface green, dull, rugose on older leaves; lower surface pale green, slightly pubescent; veins indistinct; leaf usually not lobed with terminus acute to sometimes obtuse; petiolar sinus deep to medium, narrow, sometimes closed and overlapping; basal sinus usually absent; lateral sinus shallow to a mere notch when present; teeth variable in depth and width. Flowers self-fertile, open late; stamens upright.

Fruit ripens too late for this locality, keeps well when properly matured. Clusters medium to small, inclined to short, moderately broad, tapering, usually single-shouldered, medium to compact; peduncle short to medium, thick, sometimes flattened; pedicel intermediate in length, slender, covered with few warts; brush dull, wine-colored. Berries medium to small, roundish to oblate, black, somewhat glossy, covered with heavy blue bloom, persistent, soft. Skin thin, of average toughness, does not adhere to the pulp, contains a large amount of dark red pigment, no astringency. Flesh greenish, translucent, juicy, tender, spicy, tart and somewhat astringent. Seeds separate fairly easily from the pulp, two to six, average three, numerous, medium to small, intermediate in breadth and length, not notched, brownish; raphe distinct; chalaza small, above center, circular, obscure. Must 105°–110°.

NORWOOD.

(Vinifera, Labrusca.)

1. *Mass. Hort. Soc. Rpt.*, 1880:231. 2. *Am. Pom. Soc. Rpt.*, 1881:43. 3. *Ill. Sta. Bul.*, 28:256. 1893. 4. *Bush. Cat.*, 1894:164. 5. *N. Y. Sta. An. Rpt.*, 13:605. 1894. 6. *Col. Sta. Bul.*, 29:19 1894. 7. *N. Y. Sta. An. Rpt.*, 17:533, 545, 546, 548, 552. 1898. 8. *Kan. Sta. Bul.*, 110:242. 1902.

Norwood is a Labrusca-Vinifera cross-breed of the same specific parentage as Rogers' hybrids which it greatly resembles. It is rather more hardy than most other grapes of its breeding and is preeminently a long keeper, surpassing most of the similar hybrids in this respect, though all of these are notable for their keeping quality. But the variety is incapable of self-fertilization and does not set its fruit well even in a mixed vineyard, which fault should debar it from either the commercial or the amateur list. The quality is from good to very good.

N. B. White originated Norwood from seed of Concord fertilized with Black Hamburg. It was introduced about 1880 and has been rather widely tested but has never been popular, and is now seldom seen in varietal vineyards.

Vine vigorous, subject to winter injury in unfavorable locations, variable in productiveness. Canes intermediate in length and number, slender; tendrils continuous to intermittent, bifid. Leaves large, not uniform in color, thin; lower surface grayish-green, thinly pubescent. Flowers sterile to imperfectly self-fertile, open late; stamens short. Fruit ripens a little earlier than Concord, keeps and ships well. Clusters large to medium, often long and broad, irregularly tapering, sometimes heavily single-shouldered, intermediate in compactness. Berries large, roundish to oval, purplish-black covered with heavy blue bloom, very persistent, firm. Skin thick, rather tough, adheres considerably to the pulp, decidedly astringent. Flesh greenish, tough, stringy, slightly foxy, sweet at skin to acid at center, good to very good in quality. Seeds adherent, rather large, long, sharp-pointed.

(I) OHIO.

(Bourquiniana.)

1. *Mag. Hort.*, 8:168. 1842. 2. *Ib.*, 9:191, 430. 1843. 3. Downing, 1845:251, 257. 4. *U. S. Pat. Off. Rpt.*, 1845:937, 940. 5. *Ib.*, 1847:465. 6. *N. Y. Ag. Soc. Rpt.*, 1848:366. 7. Thomas, 1849:398. 8. *Mag. Hort.*, 16:546. 1850. 9. *Horticulturist*, 6:224. 1851. 10. *Bush. Cat.*, 1883: 127. 11. *Tex. Farm and Ranch*, Feb. 8, 1896:11. 12. *Traité gen. de vit.*, 6:374. 1903.

Alabama (12). *Black Spanish* (12). *Black Spanish Alabama* (12, ?10). *The Black* (12).

Blue French (12). *Burgundy* (12). *Cigar Box* (2, 8, 9, 11, 12). *Devereaux* (12). *El Paso* (12) *Jack* (9, 10, 12). *Jacques* (10, 12). JACQUEZ (12). *Jac* (12). *Jacquet* (12). *Lenoir* (12). LONGWORTH'S OHIO (4, 8). *Longworth's Ohio* (3, 7, 10, 11, 12). *MacCandless* (12). *Ohio* (12). *Segar Box* (3, 6, 7, 10, 12).

At one time Ohio attracted a great deal of attention in southern grape regions as a wine grape of the Lenoir group but was discarded as inferior to other similar grapes, lacking chiefly in hardiness and in health of vine. The grape is somewhat interesting from its singular history.

In 1834 some grape cuttings in a cigar-box were left at the home of Nicholas Longworth of Cincinnati, Ohio, during Mr. Longworth's absence from home. The man who left them did not return and Longworth could not succeed in tracing the donor's identity. From these came Ohio.

The Ohio has, at different times, been said to be the same, in turn, as Herbemont, Lenoir and Norton. In regard to the first, Longworth had Herbemont in cultivation before he received the Ohio and neither he nor his vineyardists failed to see distinct and constant differences between the two varieties. The last two are disposed of in the *Cincinnati Horticultural Soc'cty Report* given on the next page. Longworth and others corroborated these statements from their own comparisons of the varieties growing in the vineyards around Cincinnati. Many grape-growers, and Longworth of the number, have been of the opinion that Ohio might be the same as the variety cultivated in Mississippi under the name Jack or Jacques, both names being corruptions of Jacquez, an old Spaniard who had introduced the grape into the section around Natchez. The Ohio is probably now obsolete. It did not succeed north of Cincinnati and its culture was dropped in the place of its origin on account of its susceptibility to mildew and black-rot.

The following description of Ohio is taken from a report to the Cincinnati Horticultural Society:[1] "Very fine specimens of the grape cultivated under this name, were presented by N. Longworth and J. E. Mottier, some of the bunches measuring nine inches in length. As there has been some belief expressed by eastern cultivators, that this grape is the same as Norton's Seedling, of Virginia, the committee took pains to examine them together, in Mr. Longworth's garden, where both were pointed out to us

[1] *Mag. Hort.*, 9:430. 1843.

by Mr. Sleath, the gardener. The difference between the two was at once apparent and striking. In the grape shown as the Norton's Seedling, said by Mr. Sleath to have been obtained from Mr. Norton himself, the wood is not so bright a red as in the Ohio, and the leaf is large and entire, whereas that in the Ohio is three-lobed; the bud is also much less prominent and not so pointed as in the Ohio. The bunches of fruit in the Norton's Seedling were shorter and more compact, with a thick pulp. In the Ohio, the bunches were long, very much shouldered, conical or sharp-pointed, and the fruit without pulp — sweeter, more juicy and vinous in flavor, and the seeds smaller, darker colored and less numerous than in the Norton's Seedling.

"The Committee think the grape brought into notice here, by N. Longworth, Esq., under the names of the Ohio or Cigar box, a valuable and distinct variety, and well worthy of cultivation. This grape has a stronger resemblance to the Le Noir which was also growing near; but its bunches were more shouldered, more pointed, and less compact."

(II) OHIO.

(Labrusca.)

1. *U. S. D. A. Rpt.*, 1892:264. 2. *Am. Pom. Soc. Rpt.*, 1895:75.

Another Ohio originated with R. H. Hunt of Euclid, Ohio, about twenty years ago. Of this variety Van Deman says:

"Cluster large, tapering, slightly shouldered. Berry rather large, round, black with slight bloom; skin rather thick, tender; pulp moderately juicy, tender. Seeds small, three or four in number. Flavor mild, slightly subacid; quality medium. Season early."

This variety is not in the collection of this Station and we have not been able to find either vines or fruit.

ONEIDA.

(Vinifera, Labrusca.)

1. *Bush. Cat.*, 1883:128. 2. *Mass. Hatch Sta. Bul.*, 2:21. 1888. 3. *Ill. Sta. Bul.*, 28:261. 1893. 4. *N. Y. Sta. An. Rpt.*, 17:533, 548, 556. 1898. 5. *Mich. Sta. Bul.*, 169:174. 1899. 6. *Ga. Sta. An. Rpt.*, 13:328. 1900. 7. *N. Y. Sta. An. Rpt.*, 21:396. 1902.

Oneida is a New York seedling, interesting as an offspring of the Vinifera-Labrusca hybrid Merrimac. It was sold by subscription in 1884 and thereby somewhat widely distributed but has not generally been reported upon with favor and is of doubtful value. There are many com-

plaints of its being unfruitful and some of its being unhealthy and in consequence a weak grower. In some sections, however, it is fairly satisfactory. While it keeps well it is said to lose flavor soon after picking. Oneida is one of the rare sorts with erect stamens and yet self-sterile.

H. Thacher of Oneida County, New York, originated Oneida from seed of Merrimac planted in 1871. It bore its first fruit in 1875 and was introduced by A. M. Purdy of Palmyra in 1884. The vine characters are largely those of Labrusca but the fruit shows very strongly the descent from Vinifera. Unlike the berries of Labrusca there is no disagreeable taste near either skin or seeds and the texture of skin and flesh is much like that of the European Malaga.

Vine medium in vigor, not hardy, variable in productiveness, somewhat subject to attacks of fungi. Canes medium to long, numerous, often rather slender, roughened; tendrils continuous, bifid. Leaves large to medium, moderately light green; lower surface pale green, pubescent. Flowers sterile, open medium late; stamens upright. Fruit ripens later than Concord, keeps well. Clusters small to medium, tapering, usually single-shouldered, loose. Berries variable in size, roundish, handsome red in color, almost equal to Delaware although in some seasons the berries have an unattractive greenish-red color. Skin thick, adheres considerably to the pulp. Flesh somewhat stringy, tender, vinous, sweet from skin to center, with some Vinifera sprightliness, fair to good in quality. Seeds separate easily from the pulp, not numerous, rather large, broad, short, plump, usually with a small enlarged neck; chalaza large, distinct, roughened.

OPORTO.

(Riparia, Labrusca.)

1. *Mag. Hort.*, 26:552. 1860. *fig.* 2. *U. S. Pat. Off. Rpt.*, 1861:477. 3. *Am. Pom. Soc. Cat.*, 1862:90. 4. *Am. Pom. Soc. Rpt.*, 1862:157. 5. Strong, 1866:352. 6. Husmann, 1866:124. 7. Fuller, 1867:247. 8. *Am. Jour. Hort.*, 4:275. 1868. 9. *Am. Pom. Soc. Rpt.*, 1871:108. 10. *Mich. Pom. Soc. Rpt.*, 1872:540. *fig.* 11. *Bush. Cat.*, 1883:128.

Blue Tart (2). *Blue Vine Grape* (2). *Oporto* (2).

Oporto was at one time somewhat sought for as a wine grape from the fact that its wine resembled in color and flavor that from Oporto. The name has given many the idea that the grape is a European variety — a misnomer in this respect, as its botanical characters show it to be a cross between Riparia and Labrusca. The variety is now scarcely known, being inferior in most of its horticultural characters to others of its species, but it might be valuable in breeding work for some of its characters. Oporto

is very hardy, unusually free from fungal diseases, and its must is very thick and dark, even staining the hands a deep purple, hence suitable for adding color to wines. The variety is very resistant to phylloxera and has been used in France as a phylloxera-resistant grafting stock.

The origin of this variety is unknown. It was introduced into cultivation about 1860 by E. W. Sylvester of Lyons, New York. The Oporto was placed on the American Pomological Society list in 1862 and removed in 1867. The botanical characters indicate that this variety is a Riparia-Labrusca cross-breed. It has much the same vine characters as Clinton, but is, if anything, more rampant in growth than that vigorous variety.

Vine vigorous to very vigorous, unusually hardy, healthy, variable in productiveness. Canes above medium to long, of medium thickness, dark brown to reddish-brown, surface covered with thin blue bloom; tendrils continuous, bifid. Stamens reflexed.

Fruit ripens with Concord, ships and keeps well. Clusters medium to small, inferior in length, intermediate in width, cylindrical to oval, often single-shouldered, variable in compactness. Berries below medium in size, roundish to oblate, frequently compressed on account of compactness of cluster, black, glossy, covered with abundant blue bloom, persistent, firm. Skin very thin, tender, contains a large amount of dark wine-colored pigment. Flesh nearly white, or sometimes with purplish tinge, moderately juicy, fine-grained, inclined to solid, sweet to somewhat acid, decidedly spicy, of fair quality. Seeds separate somewhat easily from the pulp, often numerous, below medium to small, of average length, inclined to broad, faintly notched, often sharply pointed, plump, dark brown; raphe sometimes shows as a partly submerged cord in the shallow groove; chalaza of average size, above center, oval, nearly obscure.

ORIENTAL.

(Vinifera, Labrusca.)

1. Barry, 1883:449. 2. *Kan. Hort. Soc. Rpt.*, 1889-90:95. 3. *Ill. Sta. Bul.*, 28:256. 1893. 4. *Col. Sta. Bul.*, 29:19. 1894. 5. *Bush. Cat.*, 1894:165.

Oriental is an excellent dark red Vinifera-Labrusca hybrid resembling Rogers' red hybrids but not in any way surpassing them. While a good grape, it is doubtful if it can take the place of the better known varieties of Rogers. Like many grapes of this class its fruit is of high quality but the vine is of only moderate vigor and is susceptible to mildew and black-rot. Oriental is more satisfactory in the dry portions of the middle West than in New York.

This variety was produced by N. B. White of Norwood, Massachusetts, from seed of a wild Labrusca fertilized with Black Hamburg pollen.

Vine vigorous, not always hardy, averages with Concord in productiveness. Canes unusually long, above medium in number and thickness, surface slightly roughened; tendrils continuous, sometimes intermittent, bifid to trifid Leaves large, green; lower surface grayish-green, pubescent. Fruit ripens about ten days before Concord, keeps well. Clusters intermediate in size and length, broad, vary from single-shouldered to double-shouldered, loose. Berries large to medium, oval to roundish, dull dark red, covered with lilac bloom, inclined to drop somewhat from pedicel, soft. Skin thick, tough, with but little astringency. Flesh somewhat tough, stringy, coarse, vinous, sweet from skin to center, good in quality. Seeds adherent to the pulp, often numerous, large, long, medium to broad, blunt; chalaza central to distinctly above center, frequently with shallow radiating furrows.

OTHELLO.

(Vinifera, Riparia, Labrusca.)

1. *Gar. Mon.*, 9:22, 23. 1867. *fig.* 2. *Am. Pom. Soc. Rpt.*, 1867:173. 3. Downing, 1869: 552. 4. *Grape Cult.*, 2:24, 25. 1870. *fig.* 5. *Bush. Cat.*, 1894:167. 6. *Tenn. Sta. Bul.*, Vol. 9: 185. 1896. 7. *Tex. Sta. Bul.*, 48:1151, 1161. 1898. 8. *Mo. Sta. Bul.*, 46:40, 43, 44, 45, 76. 1899. 9. *Ga. Sta. Bul.*, 53:47. 1901. 10. *Kan. Sta. Bul.*, 110:246. 1902. 11. *Traité gen. de vit.*, 5:160. 1903.

Arnold's Hybrid No. 1 (4). Arnold's No. 1 (1). *Arnold's No. 1* (3, 5, 6, 11). Arnold's Hybrid (2). *Arnold's Hybrid* (11). *Canadian Hamburg* (3, 11). *Canadian Hybrid* (3, 11). *Challenge?* (11).

Othello is interesting as being so far the most valuable hybrid between Vinifera and Riparia, having attracted much attention in Europe as well as in America. The significance of the name is not apparent unless, because of its dark color, it was christened after Shakespeare's dusky Moor. In France, Othello does remarkably well as a direct producer and is used somewhat for a resistant stock. While most of its characters are spoken of in the superlative by the French, in America it is not so highly thought of chiefly because of its susceptibility to fungi, though it shows other weaknesses which seem inherent to hybrids of Vinifera and native species when grown in this country. The fruit of Othello matures so late that it could never become a valuable variety for any considerable portion of New York. It is in no sense a table grape nor does it make, according to the French,[1] a high grade of wine, but rather a well-colored, pleasant, ordinary wine of considerable alcoholic strength.

[1] *Traité gen. de vit.*, 6:166. 1903.

OTHELLO

Charles Arnold of Paris, Brant County, Ontario, produced Othello from seed of Clinton fertilized by Black Hamburg. The seed was planted in 1859 and the variety was sent out for testing about ten years later. There seems considerable doubt whether Arnold's Clinton was the same as the variety known under that name in the United States, but if not, it was similar. Assuming that Arnold's is the well known Clinton, Othello is descended from Labrusca, Riparia and Vinifera. The characters of the three species are shown in the variety. The foxy flavor, the tomentum of the leaf, the pulpy flesh, and the usually continuous tendrils are all from Labrusca. Riparia is revealed in the long, slender canes, the resistance to phylloxera and the shallow, spreading root system. There are but few of the characters of Black Hamburg, the Vinifera parent, to be found and yet the much lobed leaf, the cluster, the oval berry and the flavor indicate the Old World grape and make fairly certain the triple origin.

Vines vigorous, hardy, usually productive, slightly susceptible to attacks of mildew in some localities. Canes long, intermediate in number and size, light to dark brown; nodes enlarged, frequently strongly flattened; internodes medium to below in length; diaphragm of average thickness; pith intermediate in size; shoots pubescent; tendrils continuous, sometimes intermittent, of medium length, bifid to trifid.

Leaf-buds intermediate in size, length and width, conical to nearly obtuse. Leaves of average size and thickness; upper surface light green, dull and smooth; lower surface pale green, pubescent; lobes three to five with terminal lobe acute to obtuse; petiolar sinus deep to medium, very narrow, frequently closed and overlapping; basal sinus shallow, narrow; lateral sinus deep to medium, not wide; teeth medium to very deep, rather wide; stamens upright.

Fruit ripens late, keeps fairly well. Clusters very large to above medium, long, broad, tapering, frequently with a loose single shoulder, two to three bunches per shoot, compact; peduncle medium to long, intermediate in thickness; pedicel nearly long, medium to slender, covered with numerous small warts, enlarged at point of attachment to fruit; brush very short, wine-colored. Berries large to medium, oval to roundish, black, glossy, covered with abundant blue bloom, very persistent, intermediate in firmness. Skin thin, tough, adheres strongly to the pulp, contains a moderate amount of bright colored red pigment, without astringency. Flesh dark green, very juicy, fine-grained, slightly tough, sprightly, low in quality for table use. Seeds separate somewhat easily from the pulp, one to three in number, medium to below in size, of average length and breadth, with neck sometimes slightly swollen, brownish; raphe usually distinct; chalaza small, above center, oval to circular, not obscure.

OZARK.

(Aestivalis, Labrusca.)

1. *Mo. Hort. Soc. Rpt.*, 1889:374. 2. *Ib.*, 1890:156. 3. *Ib.*, 1891:128. 4. *Ib.*, 1892:267. 5. *Bush. Cat.*, 1894:167. 6. *Va. Sta. Bul.*, 94:135. 1898. 7. *Mo. Sta. Bul.*, 46:40, 43, 44, 45, 52. 1899. 8. *Mich. Sta. Bul.*, 169:174. 1899. 9. *Ky. Sta. Bul.*, 92:95. 1901. *fig.* 10. *Ga. Sta. Bul.*, 53:47. 1901. 11. *Mo. Hort. Soc. Rpt.*, 1905:213.

Ozark belongs to the South and to Missouri, and the Ozarks in particular, and cannot be ripened in the average New York season. Its merits and demerits have been threshed out by the Missouri grape-growers with the result that its culture is somewhat increasing. It is a wine and not a table grape, of low quality, partly, perhaps, from overbearing which it habitually does unless the fruit is thinned. It is healthy and a very strong grower; but is self-sterile, which is against it as a market sort. In spite of self-sterility and low quality, however, it is a promising sort for the country south of Pennsylvania.

Ozark was originated by Dr. J. Stayman of Leavenworth, Kansas, from seed which he states was from an unknown source. The variety was introduced by Stayman & Black about 1890. The variety apparently is of Aestivalis descent with a slight admixture of Labrusca. There was another Ozark[1] raised by Frederick Muench of Marthasville, Warren County, Missouri, in 1851. It has probably long been obsolete.

Vine vigorous to very vigorous, usually hardy, medium to very productive. Canes rather long, often somewhat thick, intermediate in number, covered with thin blue bloom, surface slightly roughened; tendrils intermittent, usually bifid. Leaves unusually healthy and attractive, dense, medium to large, light green; lower surface pale green, thinly pubescent and cobwebby. Flowers sterile or nearly so, open late; stamens reflexed. Fruit ripens late, keeps well. Clusters medium to large, long to medium, usually with a long and loose single shoulder, very compact. Berries variable in size, dull black, covered with abundant blue bloom, persistent. Skin variable in thickness, tough, contains a large amount of wine-colored pigment. Flesh not very juicy, tender when fully ripe, mild, fair in quality. Seeds separate somewhat easily from the pulp, medium to small, not notched; raphe shows as a distinct cord-like ridge; chalaza plainly above center, very distinct.

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[1] *U. S. Pat. Off. Rpt.*, 1855:308.

PEABODY.

(Riparia, Labrusca, Vinifera.)

1. *Bush. Cat.*, 1883:129. 2. *Am. Pom. Soc. Rpt.*, 1883:92. 3. *Mass. Hatch Sta. An. Rpt.*, 6:22. 1893. 4. *Va. Sta. Bul.*, 30:108. 1893. 5. *Can. Cen. Exp. Farms Rpt.*, 1894:139. 6. *Mich. Sta. Bul.*, 169:174. 1899. 7. *Ib.*, 194:58. 1901.

Peabody is a comparatively unimportant offspring of Clinton produced by Ricketts. The grapes are too small for dessert purposes and their value for wine seems not to have been determined though from its parentage it would be called a wine grape. In general appearance Peabody resembles Ricketts' Advance but is later, not so strong a grower, nor so prolific nor hardy. It appears to do better in the northern tier of states or in Canada than farther south.

This variety is supposed to be a seedling of Clinton grown by J. H. Ricketts about 1870 and introduced in 1882. The fruit is distinctly different in several characters from Clinton or other seedlings of that variety suggesting that Peabody is not a pure-bred seedling.

Vine vigorous, hardy, produces medium crops. Canes long, numerous, often thick, light brown with ash-gray tinge, considerably darker at nodes, covered with thin blue bloom; tendrils intermittent, bifid to trifid. Leaves medium to above in size, dark green, thin, lower surface pale green, nearly glabrous. Flowers semi-fertile, open in mid-season; stamens upright. Fruit ripens rather early, keeps well. Clusters large to medium, medium to long, usually with a fair-sized shoulder connected to the bunch by a long stem, compact to medium. Berries intermediate in size, distinctly oval to roundish, black, glossy, covered with abundant blue bloom, persistent. Skin thick, tough, not astringent. Flesh very juicy, tender, vinous, spicy, agreeably sweet at skin to tart at center, good in quality. Seeds usually separate from the pulp easily when fully mature, intermediate in size, broad; raphe sometimes shows as a partially submerged cord in the bottom of a rather wide, deep groove; chalaza distinctly above center, often roughened.

PERFECTION.

(Labrusca, Bourquiniana, Vinifera.)

1. *Mo. Hort. Soc. Rpt.*, 1889:372. 2. *Ib.*, 1892:268. 3. *Bush. Cat.*, 1894:168. 4. *Va. Sta. Bul.*, 94:138. 1898. 5. *Ga. Sta. Bul.*, 53:48. 1901.

Perfection is a seedling of Delaware, which it greatly resembles but does not equal in New York, being hardly as high in quality, does not keep as well, shrivels before ripening, and shells badly. In its vine characters

it is much more like a Labrusca than Delaware, suggesting that it is a Delaware cross. In the Southwest it is considered a valuable early red grape.

Dr. J. Stayman of Leavenworth, Kansas, originated Perfection from seed of Delaware; sent out for testing about 1890.

Vine medium to vigorous, healthy, injured in severe winters, productive. Canes intermediate in length and number, slender; tendrils intermittent, trifid to bifid. Leaves healthy, medium in size and color; lower surface grayish-white with tinge of bronze, heavily pubescent. Flowers fertile or nearly so, open in mid-season; stamens upright. Fruit ripens before Delaware, does not keep well. Clusters intermediate in size, averaging slightly larger than Delaware, of fair length, usually single-shouldered, compact. Berries medium to small, nearly roundish when not misshapen by compactness of cluster, attractive red but slightly less brilliant than Delaware, covered with thin gray or faint lilac bloom, inclined to drop from pedicel, soft. Skin thin, variable in toughness, not astringent. Flesh medium in juiciness and tenderness, vinous, mild, moderately sweet, good in quality but inferior to Delaware. Seeds adherent to the pulp, quite numerous, below medium to small, of average length, often with slightly enlarged neck.

PERKINS.

(Labrusca, Vinifera.)

1. *Horticulturist*, 14:246. 1859. 2. *Mag. Hort.*, 27:523, 532. 1861. 3. *Am. Pom. Soc. Rpt.* 1862:147. 4. *Am. Pom. Soc. Cat.*, 1875:24. 5. *Ill. Hort. Soc. Rpt.*, 1878:8. 6. *Am. Pom. Soc. Rpt.*, 1883:58. 7. *Mo. Hort. Soc. Rpt.*, 1883:40. 8. *Neb. Hort. Soc. Rpt.*, 1890:93. 9. *Ill. Sta. Bul.*, 28:261. 1893. 10. *Bush. Cat.*, 1894:168, 169. *fig.* 11. *N. Y. Sta. An. Rpt.*, 17:534, 548, 556. 1898. 12. *Mich. Sta. Bul.*, 169:174. 1899. 13. *Ala. Sta. Bul.*, 110:69, 70, 88. 1900. 14. *S. C. Sta. Bul.*, 58:7, 8. 1901. *fig.*

Perkins was at one time grown largely as an early grape but has been very generally discarded on account of its poor quality. Its pulp is hard and its flavor is that of Wyoming, Northern Muscadine and their like, all easily identified and best characterized by their disagreeable foxiness. As with nearly all Labruscas it is a very poor keeper. Notwithstanding the faults of its fruit, Perkins may have value in regions where grape-growing is precarious; for it is one of the most reliable grapes cultivated, being hardy, vigorous, productive, and very free from fungal diseases. Added to the above qualities, it is early, thus making a plant well worthy the attention of the grape-breeder.

This variety is said to be an accidental seedling found about 1830 in the garden of Jacob Perkins of Bridgewater, Massachusetts. For many years it had only a local reputation and became known to viticulturists

about 1860. It was placed on the grape list of the American Pomological Society fruit catalog in 1875 and although several efforts have been made to have it removed it still remains. It was suspected by some of those familiar with its early history to be a seedling of Isabella or Catawba but there is little or nothing in the vine or fruit to substantiate such a supposition.

Vine vigorous, healthy, hardy, productive. Canes long to medium, numerous, thick to medium, rather dark brown, deepening in color at the nodes, surface heavily pubescent; tendrils continuous, bifid to trifid. Leaves above medium to small, thick; upper surface medium green, medium to slightly rugose; lower surface grayish-white, heavily pubescent; veins distinct. Flowers nearly fertile, open medium early; stamens upright.

Fruit ripens earlier than Delaware, ships well for an early grape. Clusters intermediate in size and length, broad to medium, cylindrical to slightly tapering, often with a short single shoulder, compact. Berries large to medium, distinctly oval, dull green changing to an attractive pale lilac or light red when fully ripe, covered with rather abundant gray or lilac bloom, inclined to drop considerably from the pedicel, somewhat soft. Skin thin, tough, contains no pigment. Flesh nearly white, medium juicy, stringy, fine-grained, firm and meaty, very foxy, sweet at skin to nearly acid at center, poor to fair in quality. Seeds decidedly adherent, numerous, medium to above in size, width and length, somewhat blunt, light brown with yellow tips; raphe buried in a narrow, nearly deep groove; chalaza small, distinctly above center, oval to pear-shaped, rather distinct.

POCKLINGTON.

(Labrusca.)

1. *Gar. Mon.*, **21**:207, 362. 1879. 2. *Mass. Hort. Soc. Rpt.*, **1880**:238. 3. *Gar. Mon.*, **22**:176. 1880. 4. *Am. Pom. Soc. Rpt.*, **1881**:32, 44. 5. *Am. Pom. Soc. Cat.*, **1881**:24. 6. *Am. Pom. Soc. Rpt.*, **1883**:58. 7. *Rural N. Y.*, **45**:622, 653. 1886. 8. *Ohio Hort. Soc. Rpt.*, **1886-87**:171. 9. *Ill. Sta. Bul.*, **28**:206. 1893. 10. *Bush. Cat.*, **1894**:169. 11. *N. Y. Sta. An. Rpt.*, **13**:605. 1894. 12. *Ib.*, **15**:432, 433. 1896. 13. *Ib.*, **17**:534, 542, 544, 545, 547, 552, 556. 1898. 14. *Ga. Sta. Bul.*, **53**:48, 52, 58. 1901. 15. *Kan. Sta. Bul.*, **110**:237. 1902.

Golden Pocklington (10).

Before the advent of Niagara, Pocklington was, all things considered, the leading white grape, having very generally displaced Martha. The variety had the fatal fault, however, of ripening late in the latitude of New York which, with some minor defects, has caused it to fall below Niagara in value for the grape districts of this region if not for the whole country. It is now being grown less and less, and though still commonly found, must soon become largely a grape for the amateur and the collector.

Pocklington is a seedling of Concord and resembles its parent in most of its vine characters, fully equaling or surpassing it in hardiness, but of slower growth and not quite as healthy, vigorous or productive. In quality it is as good if not better than either Concord or Niagara, being sweet, rich and pleasant flavored, though as with the other two grapes it has a little too much foxiness for critical consumers of grapes. It is a handsome fruit, a delicate golden yellow in color, being often called the Golden Pocklington, and with finely formed bunches and berries making it one of the most attractive of all green grapes. Pocklington keeps and ships better than Concord or than any of the latter's seedlings, having a tough, though comparatively thin, skin. Under some conditions, it ripens unevenly and in some localities it is unfruitful. Pocklington is not equal to several other of the grapes of its season in quality, as, for instance Iona, Jefferson, Diana, Dutchess and Catawba, but it is far above the average as a table grape and for this reason and because of its handsome appearance, one of the most attractive of all green grapes, it should be retained in our list of grapes for the garden.

John Pocklington of Sandy Hill, Washington County, New York, originated Pocklington from seed of Concord about 1870. The variety was first exhibited at the New York State fair in Rochester, in 1877, and was exhibited before the American Pomological Society two years later. It was introduced by John Charlton of Rochester, New York, about 1880. In 1881 it was placed on the grape list of the American Pomological Society fruit catalog. In spite of its general failure as a commercial sort, it is still offered for sale by many nurserymen.

Vine medium in vigor, hardy, variable in productiveness, somewhat subject to mildew in the Hudson River and Central Lakes districts. Canes intermediate in length, number, and size, very dark reddish-brown; nodes enlarged, flattened; internodes medium to below in length; diaphragm thin; pith slightly above average size; shoots pubescent; tendrils continuous, of fair length, bifid to trifid.

Leaf-buds small, very short, slender, pointed, open late. Young leaves tinged on lower side only, prevailing color light rose-carmine. Leaves variable in size, medium to rather thick; upper surface light green, glossy, of average smoothness; lower surface tinged with bronze, pubescent; veins distinct; lobes none to three with terminus acuminate to acute; petiolar sinus medium to deep, rather wide; teeth of average depth, medium to rather narrow. Flowers fertile, open in mid-season; stamens upright.

POCKLINGTON

Fruit not uniform in season of ripening but averaging later than Concord, keeps and ships fairly well. Clusters medium to large, intermediate in length and breadth, cylindrical to slightly tapering, often single-shouldered, medium to compact; peduncle medium to short, of average thickness; pedicel short to medium, thick, covered with few small warts; brush short, greenish. Berries large to above medium, slightly oblate, attractive yellowish-green or with tinge of amber, covered with thin gray bloom, variable in adhesion to pedicel, nearly firm. Skin covered with scattering russet dots, thin and tender, adheres slightly to the pulp, contains no pigment, faintly astringent. Flesh light green, often with yellow tinge, translucent, juicy, tough, fine-grained, slightly foxy, nearly sweet at skin to tart at center, good in quality. Seeds do not separate easily from the pulp, one to six, average three, intermediate in size, length and breadth, brownish; raphe obscure; chalaza of medium size, slightly above center, usually oval, obscure.

POUGHKEEPSIE.

(Bourquiniana, Labrusca, Vinifera.)

1. *Gar. Mon.*, 22:176. 1880. 2. *Am. Pom. Soc. Rpt.*, 1881:44. 3. *N. Y. Sta. An. Rpt.*, 9:329. 1890. 4. *Ib.*, 11:632. 1892. 5. *Bush. Cat.*, 1894:170. 6. *N. Y. Sta. An. Rpt.*, 17:534, 547. 1898. 7. *Mo. Sta. Bul.*, 46:41, 43, 44, 45, 53. 1899. 8. *Mich. Sta. Bul.*, 169:175. 1899. 9. *Ga. Sta. Bul.*, 53:48. 1901. 10. *Kan. Sta. Bul.*, 110:239. 1902.

Poughkeepsie Red (1, 2, 4, 5, 7, 9).

Poughkeepsie has been known on the Hudson River for nearly a half century yet it is now but little grown there and has not been widely disseminated elsewhere. There is no doubt as to its quality, both as a table grape and for wine; in this respect it is considered by many as equal to the best of our American varieties and quite the equal of some of the finer European sorts. But the vine characters are practically all poor and the variety is thus effectually debarred from common cultivation. Both vine and fruit greatly resemble Delaware but it is not the equal of the latter variety in vine characters and does not surpass it in fruit. In particular, it is more easily winter-killed and is less productive than Delaware. It ripens with us a little earlier than the last named sort and this with its beauty and fine quality is sufficient to recommend it for the garden at least.

A. J. Caywood of Marlboro, New York, originated Poughkeepsie, it is said, from seed of Iona fertilized by mixed pollen of Delaware and Walter. The original seedling was raised in the sixties but the variety was only known locally until about 1880 when it was brought before the public. It has never been popular in any section and is now nearly obsolete.

Vine intermediate in vigor, doubtfully hardy, variable in productiveness, some seasons producing such heavy crops that the vine is weakened, and on this account a somewhat uncertain bearer. Canes medium to short, intermediate in number, thick to medium, dark reddish-brown; tendrils intermittent, frequently three in line, bifid to trifid. Leaves not healthy, medium to small, of average thickness; upper surface medium green, glossy, somewhat rugose on older leaves; lower surface pale green to grayish-green, thinly pubescent. Flowers fertile, open medium late; stamens upright.

Fruit ripens about with Delaware, keeps and ships fairly well. Clusters medium to below in size, intermediate in length and width, tapering to cylindrical, usually single-shouldered, very compact. Berries small, roundish, pale red to attractive red when properly ripened, covered with a medium amount of dark lilac bloom, persistent, firm. Skin thin and tender but does not crack, contains no pigment. Flesh pale green, very juicy, tender, nearly melting, fine-grained, vinous, sweet or nearly so from skin to center, refreshing, very good to best in quality. The flesh characters closely resemble Delaware. Seeds separate easily from the pulp, small, of medium length, medium to broad, usually plump with slightly enlarged neck, brownish; raphe obscure; chalaza of average size, distinctly above center, circular, obscure.

PRENTISS.

(Labrusca, Vinifera.)

1. *Mich. Pom. Soc. Rpt.*, 1878:357. 2. *Ib.*, 1879:191, 194, 320, *fig.*, 321. 3. *Am. Pom. Soc. Cat.*, 1881:24. 4. *Am. Pom. Soc. Rpt.*, 1883:59, 61. 5. *Mo. Hort. Soc. Rpt.*, 1884:343, 345. 6. *Am. Pom. Soc. Rpt.*, 1885:103, 106, 144. 7. *N. Y. Sta. An. Rpt.*, 9:332. 1890. 8. *Ill. Sta. Bul.*, 28:266. 1893. 9. *Bush. Cat.*, 1894:171. *fig.* 10. Husmann, 1895:93. 11. *N. Y. Sta. An. Rpt.*, 17:534, 542, 545, 547, 552. 1898. 12. *Mich. Sta. Bul.*, 169:175. 1899.

Prentiss is a green grape of good quality, once well known and generally recommended, but now going out of cultivation. If popular preference turned upon quality, we should still grow this variety, but consideration must be given to other characters and in these Prentiss fails. Those who have grown it in the several grape districts of New York accredit the vines with about all the faults a grape can have. Thus, it is almost universally considered tender to cold, lacking in vigor and being unproductive, while in some localities it is looked upon as uncertain in bearing, and subject to rot and mildew. On the other hand, there are vineyards in which it does very well and in such it is a remarkably attractive green grape, especially in form of cluster and in form and color of berry, in these respects resembling the one-time favorite Rebecca though never so high in quality as that

variety. Its season is given as both before and after Concord. It must always remain a variety for the amateur and for special localities.

This variety is said to have been originated by J. W. Prentiss of Pulteney, Steuben County, New York, about forty years ago, from seed of Isabella.[1] It was introduced about 1880 by T. S. Hubbard of Fredonia, New York. In 1881 it was placed on the catalog of the American Pomological Society and is still retained.

Vine medium to weak, with a tendency to winter injury, unfruitful, capricious in bearing, somewhat subject to attacks of mildew. Canes intermediate in length and number, thick, light to dark brown; tendrils continuous, bifid.

Leaves above medium to small, thick; upper surface light green, smooth to rugose in the older leaves; lower surface pale green, pubescent; veins obscure. Flowers self-fertile, open in mid-season; stamens upright.

Fruit variable in season of ripening averaging about with Concord, keeps well. Clusters not large, medium to short, of average width, tapering to cylindrical, sometimes with a slight single shoulder, compact. Berries above medium to small, vary in shape from roundish to oval, light green with strong yellowish tinge covered with thin gray bloom, persistent, firm. Skin of medium thickness, somewhat tough, contains no pigment. Flesh pale green, juicy, medium in tenderness, slightly foxy, sweet next the skin to agreeably tart at center, good in quality. Seeds adherent, sometimes numerous, intermediate in size, variable in width, very slightly notched, short to medium, sharp-pointed, dark brown; raphe buried in a shallow, narrow groove; chalaza large, slightly above center, irregularly circular to oval, surface often roughened, obscure.

REBECCA.

(Labrusca, Vinifera.)

1. *Mag. Hort.*, 22:458, 484, 502. 1856. 2. *Horticulturist*, 11:528. 1856. 3. *Am. Pom. Soc. Rpt.*, 1856:39, 162, 201. *fig.* 4. *Am. Pom. Soc. Cat.*, 1856:214. 5. *Am. Pom. Soc. Rpt.*, 1858:67. 6. *Gar. Mon.*, 2:200. 1860. 7. *Am. Pom. Soc. Cat.*, 1862:90. 8. *Grant's Descrip. Cat.*, 1864:5. 9. *Mag. Hort.*, 33:70, 148. 1867. 10. *Grape Cult.*, 1:43, 150, 327. 1869. 11. *Am. Pom. Soc. Rpt.*, 1883:59. 12. *Bush. Cat.*, 1883:132. 13. *Kan. Sta. Bul.*, 110:237. 1902.

During the middle and latter part of the last century, when grape-growing was more in the hands of connoisseurs than now, Rebecca was

[1] A. J. Caywood, of Marlboro, New York, published the claim that this variety was originated by him, that he had named it Hudson but had delayed sending it out on the advice of several grape experts till it had been further tested. For this purpose Caywood says he sent the variety to about sixty men, among them J. W. Prentiss. Those who examined fruit from the two original vines said they were certainly very similar if not identical.

one of the sterling green varieties. It is wholly unsuited for commercial vineyards and for years has gradually been disappearing from cultivation. The fruit of Rebecca is exceptionally fine, consisting of well-formed bunches and berries, the latter a handsome yellowish-white and semitransparent. In quality it is of the best, with a rich, sweet flavor and pleasing aroma. But the vine characters condemn it for any but the amateur and even in the garden it must have exceptionally good care to succeed. The vines lack in hardiness and vigor, are susceptible to mildew and other fungi, and are productive only under the best conditions. It is recommended as being especially desirable to plant on south walls where it seems to succeed much better than in exposed situations.

The original vine of this variety was an accidental seedling found in the garden of E. M. Peake at Hudson, New York. It bore its first fruit in 1852 when the vine was four years old and was brought to the notice of the public four or five years later. The Massachusetts Horticultural Society awarded the variety their silver medal in 1856 and it was exhibited before the American Pomological Society the same year. Here it made so favorable an impression that it was placed with Concord and Delaware under "new varieties which promise well." In 1862 it was placed on the regular list where it remained till 1891, when it was removed. It was introduced by W. Brooksbank of Hudson.

Vine weak to vigorous, not always hardy, not productive, somewhat susceptible to attacks of mildew. Canes long to below medium, numerous, above medium to slender, inclined to dull brown, deepening in color at the nodes; tendrils continuous to intermittent, bifid to trifid. Leaves variable in size, of average thickness; upper surface dark green, dull, medium to rugose; lower surface grayish-green, pubescent; veins variable in distinctness. Flowers fertile or nearly so; stamens upright.

Fruit ripens with Concord or later, ships and keeps well. Clusters medium to small, medium to short, of average width, cylindrical to roundish, rarely with a small single shoulder, compact. Berries intermediate in size, oval, green with yellowish tinge sometimes verging on amber, not glossy, covered with thin gray bloom, persistent, firm. Skin intermediate in thickness and toughness, contains no pigment. Flesh pale green, very juicy, tender, nearly melting, vinous and a little foxy, sweet from skin to center, good to very good in quality. Seeds separate easily from the pulp, medium to below in size, medium to short, above medium to narrow, blunt, medium brown; raphe obscure; chalaza of average size, above center, circular to oval, not distinct. Must 69°.

RED EAGLE

RED EAGLE.

(Labrusca, Vinifera.)

1. *Kan. Sta. Bul.*, 28:162. 1891. 2. *N. Y. Sta. An. Rpt.*, 10:198. 1891. 3. *Ib.*, 11:633. 1892. 4. *Va. Sta. Bul.*, 30:106. 1893. 5. *N. Y. Sta. An. Rpt.*, 17:525, 534, 548, 556. 1898. 6. *Va. Sta. Bul.*, 94:138. 1898. 7. *Ga. Sta. Bul.*, 53:48. 1901.

Munson No. 47 (4).

Red Eagle is a pure-bred seedling of Black Eagle which it resembles in all characters except color of fruit. It is one of comparatively few pure-bred offspring of Vinifera-Labrusca crosses of the second generation and therefore of interest to grape-breeders. Munson, the originator of the variety, does not include Red Eagle in his last catalog but on the grounds of this Station it takes high rank as a grape of quality and at least can be recommended to the amateur. In general it shows the characters found in Rogers' first generation hybrids and ranks with them in fruit and vine.

The variety was originated by T. V. Munson, from whom it was received at this Station in 1888.

Vine medium in vigor, injured in severe winters, moderately productive. Canes of average length, medium to few, slender, dark brown, surface covered with a small amount of blue bloom; nodes prominent, slightly flattened; internodes of fair length; diaphragm intermediate in thickness; pith medium in size; shoots pubescent; tendrils continuous to intermittent, long to medium, bifid.

Leaf-buds medium to below in size, short, of average thickness, conical to obtuse, open late. Young leaves heavily tinged on under side and lightly along margin of upper side with rose-carmine. Leaves intermediate in size, thick; upper surface light green, dull, medium to slightly rugose; lower surface grayish-green, slightly pubescent; veins well defined; lobes three to five with terminus obtuse to acute; petiolar sinus deep, medium to narrow, sometimes closed and overlapping; basal sinus variable in depth, wide; lateral sinus often very deep, somewhat wide; teeth medium to deep, wide. Flowers sterile to fertile, open moderately late; stamens reflexed.

Fruit ripens a little before Concord, keeps fairly well. Clusters medium to small, variable in length, broad, slightly tapering, usually single-shouldered but sometimes double-shouldered, loose to medium with many abortive berries; peduncle nearly long to medium, inclined to slender; pedicel very long, slender; brush pale green with brown tinge, short to medium, rather slender. Berries variable in size, roundish, light to very dark red, not glossy, covered with heavy lilac or faint blue bloom, persistent, rather

soft. Skin medium to thick, tender, adheres slightly to the pulp, contains a small amount of red pigment, without astringency. Flesh greenish, transparent, juicy, very tender and melting, slightly foxy, agreeably tart next the skin to slightly acid at center, very good in quality. Seeds separate easily from the pulp, one to five, average three or four, often rather large, of mean breadth, long, somewhat blunt, light brown; raphe buried in a narrow, shallow groove; chalaza large, above center, irregularly circular to oval, distinct.

REGAL.

(Labrusca, Vinifera.)

1. *Rural N. Y.*, 62:436. 1903. 2. *Am. Pom. Soc. Rpt.*, 1903:82. 3. *N. Y. State Fr. Gr. Assoc. Rpt.*, 1904:41.

As was the case with the preceding grape, Regal is also a second generation hybrid of Vinifera and Labrusca, the parent of this variety being Lindley, which, as the technical description shows, it much resembles. The fact is again demonstrated in this variety that the characters of grape-hybrids, at least of these two species, are passed to subsequent generations much as they were found in the first generation. The fruit of Regal is attractive in appearance and in quality, its characters being much the same as those of Lindley. A seemingly insignificant fault might make it somewhat undesirable in a commercial vineyard; it is that the clusters are borne so close to the wood that it is difficult to harvest the fruit, and especially to avoid injury to the berries next to the wood. The variety is worthy of extensive trial in the vineyards and gardens of the State.

Regal was originated in Rockford, Illinois, in 1879 by A. W. Woodward. It was introduced some years later by M. Crawford of Cuyahoga Falls, Ohio. The original vine was one of a lot of Lindley seedlings. Some vines of this variety were sent out by the introducer under the title *Crawford No. 99*.

Vine vigorous, hardy, healthy, very productive. Canes intermediate in length and size, rather numerous, medium dark reddish-brown. Tendrils intermittent, bifid to trifid. Leaves healthy, medium to nearly large, of average thickness; upper surface green, slightly glossy and rugose; lower surface pale green with bronze tinge, strongly pubescent. Flowers fully self-fertile, open in mid-season; stamens upright.

Fruit ripens with Lindley or later; keeps well. Clusters small to medium, shorter than Lindley, medium to broad, cylindrical to tapering with sometimes an inclination

to oval, usually with a short single shoulder, sometimes double-shouldered, very compact. Berries above medium to below, averaging larger than Brighton, roundish but frequently compressed on account of compactness of cluster, purplish-red to dark red, covered with lilac bloom, persistent, of average firmness. Skin thin, medium to tough, contains no pigment. Flesh pale green, very juicy, fine-grained, slightly stringy and solid until fully ripe when it becomes rather tender, sweet at skin to acid at center, slightly musky, good in quality but not equal to Lindley. Seeds separate easily from the pulp, rather numerous, intermediate in size, long to below medium, above medium to narrow, slightly notched, inclined to blunt, frequently with a short enlarged neck, brownish; raphe buried in a medium-sized groove; chalaza small, above center, circular to oval, distinct.

REQUA.

(Labrusca, Vinifera.)

1. *U. S. D. A. Rpt.*, **1864**:136. 2. *Horticulturist*, **24**:126. 1869. 3. *Grape Cult.*, 1:181. 1869. 4. *N. Y. Sta. An. Rpt.*, **11**:633. 1892. 5. *Ib.*, **17**:534, 548, 550. 1898. 6. *Mo. Sta. Bul.*, **46**:41, 43, 44, 45. 1899. 7. *Mich. Sta. Bul.*, **169**:175. 1899. 8. *Ga. Sta. Bul.*, **53**:48. 1901. 9. *Can. Hort.*, **24**:261. 1901. *fig.* 10. *Kan. Sta. Bul.*, **110**:243. 1902.

ROGERS' No. *28* (1). *Rogers' No.* **28** (2, 3, 4, 9).

Requa is one of Rogers' hybrids hardly equaling others of its color and season. It is an attractive grape in cluster and berry and of very good quality but quite subject to rot and ripening too late for the grape regions of this latitude, being as late as Catawba. In giving his grapes names, Rogers used those of English or German horticultural or botanical celebrities and of some of the Indian names of counties and towns of Massachusetts. Requa was dedicated by Rogers to a Mr. Requa, a horticulturist of local note, of Salem-on-Erie, Massachusetts.

For an account of the parentage and early history of this variety see Rogers' Hybrids. In 1869 this variety was named Requa, it having been previously known as *Rogers' No. 28*. There appear at present to be two varieties passing under this name. Georgia, Texas and Missouri report this variety as having erect stamens but in our vineyard it shows only recurved stamens.

Vine medium to vigorous, hardy except in severe winters, medium in productiveness, not always healthy. Canes medium to long, intermediate in number and thickness; tendrils continuous to intermittent, trifid to bifid. Leaves large to medium, dark green, often thick and rugose; lower surface grayish-green, pubescent. Flowers sterile to partly fertile, open late; stamens reflexed. Fruit ripens about with Catawba or earlier, keeps a long time in good condition. Clusters large to medium, intermediate

in length and width, nearly cylindrical, often with a long single shoulder, compact. Berries medium to large, slightly oval to roundish, dark dull red covered with thin gray or lilac bloom, strongly adherent, not firm. Skin thin, nearly tough, adheres considerably to the pulp. Flesh very pale green, somewhat tender, rather stringy, vinous, slightly foxy, almost sweet from skin to center, good to very good in quality. Seeds slightly adherent to the pulp, above medium to medium in size and length, often rather broad, somewhat blunt.

ROCHESTER.

(Labrusca, Vinifera.)

1. *W. N. Y. Hort. Soc. Rpt.*, 23:60. 1878. 2. *Ib.*, 27:22. 1882. 3. Barry, 1883:442. 4. *N. Y. Sta. An. Rpt.*, 9:329. 1890. 5. *Ib.*, 11:034. 1892. 6. *Bush. Cat.*, 1894:173. 7. *Va. Sta. Bul.*, 94:138. 1898. 8. *N. Y. Sta. An. Rpt.*, 17:534, 546, 547, 552. 1898. 9. *Mo. Sta. Bul.*, 46:41, 43, 44, 45, 53. 1899. 10. *Mich. Sta. Bul.*, 169:175. 1899. 11. *Kan. Sta. Bul.*, 110:240. 1902.

Barry's No. 19 (1).

Rochester, as the color-plate shows, is a large-clustered red grape, very handsome in appearance. It is also very good in quality. The vine is a particularly strong grower and very productive and in the locality in and about Rochester at least, very free from diseases. It is so very vigorous that it needs much room and long pruning. The variety is difficult to propagate and therefore not in favor with nurserymen, and is to be had, if at all, usually at extra expense. The grapes are sweet, rich, and vinous, ranking from good to very good in quality. The fruit, however, should be used as soon as ripe, as it does not keep well and the berries quickly shatter from the bunch. As an attractive early red grape Rochester is well worth a place in the garden and possibly in favored locations for a special market.

Ellwanger & Barry of Rochester, Monroe County, New York, in 1867 fruited over one hundred seedling grapes which they had raised from mixed seed of Delaware, Diana, Concord, and Rebecca. Only two of these seedlings were finally saved, the Rochester and the Monroe. The Rochester was introduced by the originators about 1880.

Vine medium to vigorous, usually hardy, medium to productive. Canes long, intermediate in number and size, dark reddish-brown; nodes moderately enlarged, slightly flattened; internodes short; diaphragm thick; pith small, shoots pubescent; tendrils intermittent, long, bifid or trifid.

ROCHESTER

Leaf-buds medium to below in size, short, of average thickness, conical, open in mid-season. Young leaves tinged on upper and under sides with dull rose-carmine. Leaves medium to large; upper surface light green, slightly glossy, nearly smooth; lower surface grayish-green, pubescent; veins distinct; lobes none to three with terminus acute; petiolar sinus deep to medium, variable in width; basal sinus absent; lateral sinus shallow to a mere notch when present; teeth shallow, of average width. Flowers fertile, open mid-season; stamens upright.

Fruit ripens earlier than Concord, does not always ripen evenly, does not keep well. Clusters large to medium, about average length, broad, tapering, usually single-shouldered but sometimes heavily double-shouldered, very compact; peduncle short, intermediate in thickness; pedicel short, slender, covered with few warts; brush of medium length, slender, yellowish-brown. Berries above medium to small, oval, dark red to purplish-red but the berries do not color uniformly, dull, covered with thin, lilac bloom, inclined to drop from pedicel, soft. Skin thick to medium, somewhat tough, inclined to crack sometimes on account of compactness of cluster, does not adhere to pulp, contains no pigment, astringent. Flesh pale green, transparent, juicy, tender, fine-grained, somewhat vinous and foxy, sweet, good to very good in quality. Seeds separate easily from the pulp, one to three, average two, large, medium to short, rather broad but often blunt, quite variable, however, in general characters, medium to dark brown; raphe buried in a slight groove; chalaza of average size, above center, circular to oval, obscure.

ROCKWOOD.

(Labrusca.)

1. *Mass. Hort. Soc. Rpt.*, 1874:154. 2. *Am. Hort.*, 1889:101. 3. *N. Y. Sta. An. Rpt.*, 14:279. 1895. 4. *Bush. Cat.*, 1894:107. 5. *N. Y. Sta. An. Rpt.*, 17:534, 548, 556. 1898. 6. *Mich. Sta. Bul.*, 169:175. 1899. 7. *Ala. Sta. Bul.*, 110:74, 88. 1900. 8. *Ga. Sta. Bul.*, 53:49. 1901. 9. *Kan. Sta. Bul.*, 110:237. 1902. 10. *Mich. Hort. Soc. Rpt.*, 1903:30.

Rockwood is a comparatively unimportant black seedling of Concord and from the originator of Concord. It is of higher quality than its parent and since it is earlier, coming with Moore Early or just after, it is worthy a place in garden collections as an early black grape. It has been thoroughly tested and discarded as unprofitable by commercial vineyardists probably on account of its vine characters which on our grounds are not as good as those of Concord and would disqualify it for a market variety. In appearance the fruit is much like Concord.

The variety was originated by E. W. Bull of Concord, Massachusetts, from seed of Concord. It was introduced in 1889 by George S. Josselyn of Fredonia, New York.

ROGERS' HYBRIDS.

1. *Mag. Hort.*, 23:86. 1857. 2. *Horticulturist*, 13:86, 119. 1858. 3. *Am. Pom. Soc. Rpt.*, 1860:35, 85. 4. *Ib.*, 1862:148. 5. *U. S. Pat. Off. Rpt.*, 1864:135, 136, 137. *figs.* 6. *N. Y. Ag. Soc. Rpt.*, 1865:338. *figs.* 7. *Horticulturist*, 20:81. 1865. 8. Strong, 1866:31, 339. 9. Mead, 1867:204. 10. Fuller, 1867:228, 246. 10. *Rec. of Hort.*, 1868:46. 11. *Horticulturist*, 24:126. 1869. 12. *Grape Cult.*, 1:153, 193, *fig.*, 194, 262. 1869. 13. *Am. Jour. Hort.*, 5:261. 1869. 14. *Am. Pom. Soc. Rpt.*, 1875:39. 15. *Bush. Cat.*, 1894:173. *fig.* 16. *Meehan's Mon.*, 9:94. 1899. 17. *Am. Pom. Soc. Rpt.*, 1901:166.

The forty-five seedlings known as Rogers' Hybrids were originated by Edward S. Rogers of Salem, Massachusetts.[1] Rogers states that the suggestion which started him in this work was an article by Dr. Lindley of the University of London, originally printed in the London *Horticulturist* and reprinted in Downing's *Horticulturist* for September, 1847. This article, which is entitled "Remarks on Hybridizing Plants," is a general discussion of the results of this practice so far as they were then known.

The female parent used by Rogers was a four or five year old, large-fruited Labrusca known locally as Carter or Mammoth Globe, and very similar to, but not identical with Sage. The pollen for fertilizing the blossoms of this vine was secured from vines of Black Hamburg and White Chasselas growing in a cold grapery near by. In the summer of 1851, clusters of the Carter were fertilized with pollen from the Vinifera vines

[1] Edward Staniford Rogers was born in the old family mansion on Essex Street, Salem, Massachusetts, June 28, 1826, and died in Peabody, Massachusetts, March 29, 1899. He was the son of Nathaniel Leverett Rogers, an old-time Salem merchant, who, with his brothers John and Richard, was engaged in the maritime trade. Edward Rogers was educated in Master Ira Cheever's school, a famous Salem school of the day, and, later, he made several voyages in his father's ships as clerk and supercargo and, finally, passed a number of years in the counting-room of the firm in Salem. After his father's death, Mr. Rogers lived in the old family home with his brother and their mother, and in the garden back of the house, quite large for a city lot, he indulged his natural taste for horticulture and conducted his experiments in grape hybridization.

By temperament Mr. Rogers was quiet and retiring and so generous that he gained practically no profit from his horticultural productions, for he freely gave cuttings and rooted plants of the hybrids he raised to friends and visitors before his own stock was by any means large. Mr. Rogers possessed literary ability and was an extensive reader, but could rarely be drawn into conversation excepting among his most intimate friends who were wont to "drop in" at his long, low greenhouse in the garden or at his office, extemporized in the old colonial barn at the rear of the house. After the death of his mother the old house was sold and the brothers removed to another house in Salem and some years later, after the death of his brother, Mr. Rogers bought the place, his last home, in Peabody, Massachusetts, where he cultivated trees and flowers for pleasure and experiment. An accident which resulted in a permanent lameness prevented much physical labor during his last years and probably in a measure hastened his death.

both at the time of emasculation and later, and small cotton bags were tied on the blossoms to prevent the interference of foreign pollen. In addition to the repeated applications of pollen to the stigmas, Rogers placed clusters of blossoms of the Vinifera sorts in the enclosing sacks. As a result of these pollinations, he secured about one hundred and fifty seeds which were planted in the garden that fall. In the spring of 1852 practically every seed germinated, but cut worms and other accidents reduced the number to forty-five which finally fruited. These were left to grow on poles where they were originally planted for three years, when, because of crowding, twenty-five of them were removed to another part of the garden. The untransplanted vines began to bear fruit in 1856 and the transplanted ones a few years later. The seedlings were numbered by Rogers from one to forty-five and for a long time they were known under these numbers. Of these, one to five inclusive were of the Carter-Black Hamburg cross; six to fourteen inclusive were of the Carter-White Chasselas cross; and all of the numbers from fifteen to forty-five were of Hamburg parentage. As will be noted under Salem, this was later given a number higher than forty-five, owing to the confusion of the sort with some other after being sent out. With this exception, the original crosses were all included in these numbers. In 1858 and 1859, Rogers sent many of these varieties, under the original numbers, to various people for testing. He was compelled to do this, owing to lack of room in the half acre which comprised the Rogers' garden, to properly test the sorts himself. Of this garden Marshall P. Wilder says: "It is 150 years old; a cold matted soil, filled with old apple and pear trees, currant bushes, flax, and everything mingled in together. It is in a close, hived up place in the city of Salem, and it is a wonder that he ever had a bunch of grapes to show."

Unfortunately, this dissemination led to the confusion of some of the numbers, a confusion which has never been satisfactorily straightened out.

In 1867, No. 22, or 53, was given the name Salem. Two years later at the earnest request of a committee from the Lake Shore Grape Growers' Association, Rogers gave names to several of his hybrids, as listed below. He stated that the names selected were either those of persons noted for scientific or literary attainments, or else of counties and towns in Massachusetts. There was some criticism at the time from those who thought

there were other numbers as well deserving of names as those which were so distinguished. And it must be admitted that the vines of this collection are remarkably equal in their possession of good and bad characters. About 1870, Bush of Bushberg, Missouri, received three sorts as *Rogers' No. 39*. One of these which was particularly promising, he, with Rogers' consent, named Aminia. None of the others has ever been named, although several of them are still cultivated to a minor extent. The named varieties, with the corresponding numbers, are as follows: 1. Goethe. 3. Massasoit. 4. Wilder. 9. Lindley. 14. Gaertner. 15. Agawam. 19. Merrimac. 28. Requa. 39. Aminia. 41. Essex. 43. Barry. 44. Herbert. 53 or 22. Salem (but not the Salem now known).

For some years, many grape-growers believed that these hybrids were nothing more than seedlings of the wild Labrusca mother but it was soon generally accepted that they were genuine hybrids. To those who are familiar with Rogers' work, this was evident from the first, as the Carter or Mammoth Globe is a self-sterile sort, and the sacks enclosing the blossoms would prevent the introduction of other pollen than that intentionally placed on the stigmas by Rogers himself. A. D. Rogers, a brother of E. S. Rogers, in a communication to the *Horticulturist*, in 1858, says that " many of these seedlings had upright stamens," but of the ones which were later named, Agawam alone is thus characterized. This is important in considering the value of these varieties, as no variety has ever become popular as a market sort which is self-sterile.

Rogers' Hybrids are unique in that the standard of excellence was so high in all of the forty-five seedlings produced. Some have credited this to the manner in which he did his work and in particular to the excess of pollen applied to the stigmas; others consider it more likely due to his choice of parent vines. Unfortunately the evidence bearing on this point is not sufficient to form definite conclusions.

After the production of the seedlings mentioned above Rogers continued the work, recrossing the varieties already produced with various Vinifera varieties. None of these ever showed sufficient promise to be introduced.

ROMMEL

ROMMEL.

(Labrusca, Riparia, Vinifera.)

1. *An. Hort.*, 1889:101. 2. *Ia. Hort. Soc. Rpt.*, 1890:117. 3. *N. Y. Sta. An. Rpt.*, 13:656. 1894. 4. *Bush. Cat.*, 1894:174. *fig.* 5. Husmann, 1895:125. 6. *Kan. Sta. Bul.*, 73:182. 1897. 7. *N. Y. Sta. An. Rpt.*, 17:535, 548, 556. 1898. 8. *Tex. Sta. Bul.*, 48:1151, 1162. 1898. *fig.* 9. *Mo. Sta. Bul.*, 46:41, 42, 44, 45, 53, 76. 1899. 10. *Am. Pom. Soc. Cat.*, 1899:31. 11. *Tex. Sta. Bul.*, 56:271, 280. 1900.

Rommel is rarely found under cultivation in New York, lacking somewhat in robustness, hardiness and productiveness, and being very susceptible to the leaf-hopper. The variety comes from Munson of Denison, Texas, and is seemingly too far removed from the warm climate in which it originated to be profitable in New York. Besides the defects named above, it does not attain its natural high quality in this latitude and the grapes crack badly as they ripen. The bunch and berry are attractive in form, size and color as shown in the color-plate, though the illustration does not do justice to the size of the bunch, the season of 1908, in which the fruit was produced, having been cold and wet and therefore very unfavorable to this variety. At its best, Rommel is a very good table grape and the authorities say makes a very fine white wine. The variety is of interest to the student of grapes from the standpoint of its breeding, having very largely the vine characters of its maternal parent, Elvira, with somewhat better fruit. The name commemorates the service to viticulture of Jacob Rommel of Morrison, Missouri.

T. V. Munson originated Rommel in 1885 and introduced it in 1889. The parents are Elvira pollinated by Triumph. Rommel was placed on the grape list of the American Pomological Society fruit catalog in 1899.

Vine medium to vigorous, not always hardy, medium to productive, susceptible to injury by leaf-hoppers. Canes medium to long, moderately numerous, thick to medium, light to dark reddish-brown, surface somewhat rough; nodes enlarged, often flattened; internodes medium to short; diaphragm thick or nearly so; pith medium to large; shoots slightly glabrous; tendrils intermittent, medium to long, bifid to trifid.

Leaf-buds intermediate in size and thickness, short to medium, prominent, obtuse to conical, open very late. Young leaves tinged on under side and along margin of upper side with light rose-carmine. Leaves medium to above in size, roundish, thick; upper surface light green, dull, rugose; lower surface pale green, nearly free from pubes-

cence but slightly hairy; leaf usually not lobed with terminus acute to acuminate; petiolar sinus medium to deep, narrow, often closed and overlapping; basal sinus lacking; lateral sinus very shallow when present; teeth medium to deep, of average width. Flowers semi-fertile, open moderately late; stamens upright.

Fruit ripens in mid-season, ships and keeps fairly well. Clusters variable in size, above medium to short, moderately broad, cylindrical to slightly tapering, usually single-shouldered, compact to medium; peduncle long to medium, thick; pedicel of average length, slender, usually smooth; brush short, pale green. Berries large to medium, oblate to roundish, frequently compressed on account of compactness of cluster, light green with yellow tinge, glossy, covered with a moderate amount of gray bloom, persistent, firm, but breaking easily under pressure. Skin thin, cracks badly, medium to tender, adheres very slightly to the pulp, contains no pigment, without astringency. Flesh greenish, translucent, juicy, tender and melting, slightly stringy, sweet to agreeably tart at center, variable in quality but ranks fair to good, appears to be better in some locations. Seeds separate easily from the pulp, one to four, average two, medium in size and length, rather broad, sharp-pointed, very plump, brownish; raphe buried in a somewhat wide groove; chalaza intermediate in size, above center, oval to circular, indistinct.

R. W. MUNSON.

(Lincecumii, Labrusca, Vinifera.)

1. *Mich. Hort. Soc. Rpt.*, 1893:118. 2. Husmann, 1895:120. 3. *Tex. Sta. Bul.*, 56:280. 1900. 4. *Ga. Sta. Bul.*, 53:49. 1901. 5. *Rural N. Y.*, 60:614, 726. 1901. 6. *Ib.*, 62:790, 886. 1903. 7. *Ia. Hort. Soc. Rpt.*, 1904:230.

R. W. Munson, from Texas, is a somewhat promising variety for the North for its intrinsic value, and is certainly interesting from the standpoint of its breeding as it gives Northern growers a grape with a generous admixture of Lincecumii blood. Its several essential vine characters are very good though it is self-sterile and needs a companion variety which produces an abundance of pollen. Concord and Brilliant are recommended by the originator as notable pollenizers. R. W. Munson is particularly resistant to black-rot, making it valuable for regions where this fungus is a scourge. The fruit is sweet, juicy and very pleasantly flavored, with tender pulp, and while not of the highest quality yet a most pleasing and particularly refreshing grape. The variety is well worthy more extensive trial in New York.

T. V. Munson of Denison, Texas, raised the original vine of R. W. Munson from seed of Big Berry (a variety of Post-oak) pollinated by

Triumph. The seed was planted in 1887 and the resulting variety introduced by the originator in the fall of 1894.

Vine vigorous, doubtfully hardy, productive, healthy. Canes medium to nearly long, intermediate in number, thick to medium, dark red; internodes medium to long; tendrils intermittent, bifid. Leaves healthy. Flowers sterile or nearly so, open late; stamens upright.

Fruit ripens about with Concord, does not keep well. Clusters below medium to small, rather short, often single-shouldered, compact to medium. Berries medium to large, slightly oblate, dull black covered with a medium amount of blue bloom, inclined to shatter considerably, not very firm. Skin thin, variable in toughness, not astringent. Flesh pale green, rather tender when fully ripe, peculiarly vinous, nearly sweet at skin to agreeably tart at center, slightly spicy and with some Post-oak flavor, good in quality. Seeds separate easily from the pulp, rather numerous, intermediate in size, length, and width. Raphe obscure in a very shallow groove; chalaza slightly above center, oval; obscure.

SAGE.

(Labrusca.)

1. Allen, 1848:134. 2. *Horticulturist*, 6:575. 1851. *Ib.*, 7:87, 108. 1852. 4. *U. S. Pat. Off. Rpt.*, 1853:300, 301. 5. *Mag. Hort.*, 24:91. 1858. 6. *U. S. Pat. Off. Rpt.*, 1859:48, 55, 66. 7. *U. S. D. A. Rpt.*, 1864:134. 8. *N. Y. Ag. Soc. Rpt.*, 1865:337. *fig.* 9.(?) *Bush. Cat.*, 1894:151. *Mammoth* (7, 8). ?Mammoth Sage (9). *Sage* (7, 8). *Globe* (8).

This variety, which is variously known under the names Sage, Mammoth Sage, Mammoth, and Globe, is of interest because it represents a type of large-fruited, early-ripening Labruscas which have been used frequently by breeders as the native parent in a Vinifera cross. A variety similar to this was used in particular by E. S. Rogers as the mother plant in making his notable crosses. They have also been used by White and others.

The original vine was a chance seedling found by Henry E. Sage about 1811 on the banks of a small stream near Portland, Connecticut. The variety was first brought to public notice by John Fiske Allen in 1848 through a very laudatory description which was much criticised by those who objected to the foxy aroma of the Sage but as warmly defended by others who liked the foxiness. The variety was later advertised and sent out by the Shaker community at Harvard, Worcester County, Massachusetts. Within a few years it seems to have been disseminated throughout eastern New England, and was particularly acceptable in those sections where Isabella failed to ripen. There is no evidence that it was ever planted

except in gardens. With the introduction of Concord and other early varieties of higher quality the cultivation of the Sage was dropped. It is probably now obsolete.

The best description we have of Sage is the following, copied from the *United States Department of Agriculture Report* for 1864:

"It is much like most of the wild Fox grapes of this vicinity, [Massachusetts] but the berries are much larger, light chestnut or mahogany color, and they have a flattened or compressed shape, instead of being round, frequently an inch in diameter. The bunch is small with three to six berries in a round, ball-like cluster, with sometimes a side stem with one berry at the end of it for a shoulder. The stem of the bunch is not very long. The leaves usually are 'entire' with a short pointed termination at the end of the midrib, and two other points of the other divisions into which all American leaves are divided, making always either plainly, or in the rudimental state, five lobes. Thus the leaves are not much lobed, scarcely toothed, and have a rusty, woolly appearance. The young wood, last season's growth, is hard and wiry and covered with bristles. The grape itself is sweet, but has a hard pulp, that some compare to a piece of India-rubber when eating it. It is early, and perfectly hardy, as much so as any wild grape in this vicinity."

ST. LOUIS.

(Labrusca.)

1. *Mo. Hort. Soc. Rpt.*, 1899:54. 2. *Ia. Hort. Soc. Rpt.*, 1905:166. 3. *Mich. Sta. Sp. Bul.*, 30:11. 1905.

As St. Louis grows on the Station grounds it is so similar to Worden and Concord that it would seem to be superfluous in the grape list of the State. But the variety is so highly recommended in the West, especially in the states from which the above references come, that it is possibly worthy of trial in the grape regions of New York as an early type of Concord.

St. Louis was introduced by Henry Wallis of Wellston, Missouri, about 1897. In 1900, he states that it is a seedling of Concord, was originated in St. Louis, and that it had created a sensation for twenty years in the St. Louis markets. The general character of both fruit and vine corroborates the Concord parentage though the frequently intermittent tendrils indicate there is a strain of other than Labrusca blood present.

Vine vigorous, hardy, medium to productive. Canes long to medium, intermediate in number, often rather thick, medium brown to nearly dark reddish-brown deepening in color at the nodes, covered with considerable pubescence; tendrils continuous to intermittent, bifid to trifid. Leaves very large to medium, variable in color, thick; lower

surface grayish-white tinged with bronze; heavily pubescent. Flowers fertile or nearly so, open medium early; stamens upright. Fruit ripens about with Concord, or slightly earlier, keeps and ships well. Clusters large to medium, intermediate in length, rather broad, usually single-shouldered but occasionally with a double shoulder, medium to compact. Berries nearly large to medium, roundish, dull black, covered with thick blue bloom, persistent. Skin of average thickness and toughness. Flesh tough, foxy, sweet at skin to slightly acid at center, good in quality with a slight resemblance to Concord. Seeds do not separate easily from the pulp, medium to above in size and width, intermediate in length.

SALEM.

(Labrusca, Vinifera.)

1. *Am. Pom. Soc. Rpt.*, 1862:148. 2. *U. S. D. A. Rpt.*, 1865:16. 3. *Am. Pom. Soc. Rpt.*, 1867:114. 4. Mead, 1867:222. 5. *Rec. of Hort.*, 1868:46. 6. *N. Y. Ag. Soc. Rpt.*, 1868:228. 7. *Mag. Hort.*, 34:7. 1868. 8. *Horticulturist*, 24:138. 1869. *fig.* 9. *Grape Cult.*, 1:150, 181, 327. 1869. 10. *Am. Jour. Hort.*, 5:264. 1869. 11. *Am. Pom. Soc. Cat.*, 1869:42. 12. *Grape Cult.*, 2:148, 149, *fig.*, 298. 1870. 13. *Mich. Pom. Soc. Rpt.*, 1877:205. 14. *Am. Pom. Soc. Rpt.*, 1881:42, 138. 15. *N. Y. Sta. An. Rpt.*, 9:329. 1890. 16. *Ill. Sta. Bul.*, 28:261. 1893. 17. *Tenn. Sta. Bul.*, Vol. 9:187. 1896. 18. *N. Y. Sta. An. Rpt.*, 17:535, 542, 543, 544, 548, 553. 1898. 19. *Mich. Sta. Bul.*, 169:175. 1899.

ROGERS' No. 22 (1, 2). *Rogers' No. 22* (3, 5, 6, 9, 11, 12, 13, 15). *Rogers' No. 53* (4, 9, 10, 11, 12, 13, 15, 17).

Salem is the one of Rogers' hybrids of which the originator is said to have thought most and to which he gave the name of his place of residence. Taking all of its characters, the variety is as close an approximation to the ideal Rogers had in mind of a European grape and an American vine as any one of the score or more of his hybrids. Salem ranks among the best of these hybrids for either the garden or the commercial vineyard, and while commonly found in both it has not been sufficiently recognized by those who grow grapes for the market. It is difficult to say why it is not more largely grown as a market fruit in New York. The two chief faults, unproductiveness and susceptibility to mildew, are not found in all localities, and in these at least and especially near good markets, Salem ought to take high rank as a commercial fruit.

As compared with other hybrids of Vinifera and Labrusca, Salem is early, hardy, vigorous and fairly productive of handsome fruit of high quality both for table and for wine-making. Though the color-plate does not show it, there is a suggestion in bunch and berry of Black Hamburg, the paternal parent. So, too, there is such a suggestion in the flavor and

the keeping quality and, as with the parent, the fruit neither cracks nor shatters and therefore ships well. To the two faults named above must be added that of pulpiness of berry, a defect common to many hybrids of the two species represented in Salem. It is useless to recommend for testing varieties that have been known as long and as widely grown as Salem but it is worth while, is almost a duty, in a work of this kind to urge further trials of some of the grapes of highest quality, as Salem, on a commercial basis. Such fruit properly grown, packed, and placed in the market ought to bring remunerative prices.

This one of Rogers' hybrids is *No. 22* of his Vinifera-Labrusca crosses. It early attracted favorable attention from the various cultivators who had received vines from the originator for testing. It was christened Salem by Rogers in 1867, two years earlier than his other hybrids were named. At about this time, owing to a confusion of this variety with some other, and charges that certain parties were sending out a black grape under the name *Rogers' No. 22*, Rogers changed the number of Salem to 53.

Salem was placed on the grape list of the American Pomological Society fruit catalog in 1869 and was removed in 1871, reinstated in 1873, and has since been retained. It is possible that the dropping of the name from the catalog for the one year was a printer's oversight as there is nothing in the body of the text to indicate a reason for such action. Salem has always been one of the most popular of Rogers' hybrids and it is offered for sale to-day by practically all grape nurserymen.

Vine medium to vigorous, unusually hardy, variable in productiveness, susceptible to severe attacks of mildew. Canes long, of average number, intermediate in thickness, light to dark brown; nodes enlarged, usually not flattened; internodes medium to above in length; diaphragm thick; pith medium to above in size; shoots slightly pubescent; tendrils continuous to intermittent, long to medium, bifid to trifid.

Leaf-buds rather large, of average size, thick to medium, often compressed, roundish, obtuse to conical, open early. Young leaves faintly tinged on lower side with slight rose-carmine. Leaves variable in size, medium to thin; upper surface dark green, dull, of medium smoothness; lower surface pale green with slight bronze tinge, pubescent; veins moderately distinct; lobes none to three with terminus acute; petiolar sinus deep, narrow, often closed and overlapping; basal sinus lacking; lateral sinus shallow, narrow, often notched; teeth intermediate in depth and width. Flowers sterile, open in mid-season; stamens reflexed.

SALEM

Fruit ripens slightly before Concord, keeps and ships well. Clusters medium to large, rather short and broad, tapering to cylindrical, frequently heavily single-shouldered, compact; peduncle short to medium, thick; pedicel medium to short, thick, covered with few small warts, enlarged at point of attachment to berry; brush short, pale green. Berries large to medium, roundish, very dark red, dull, covered with a medium amount of blue bloom, decidedly persistent, soft. Skin thick, intermediate in toughness, adheres strongly to the pulp, contains no pigment, astringent. Flesh slightly translucent, juicy, tender, somewhat stringy, moderately fine-grained, inclined to vinous, sprightly, sweet at skin but acid at center, good to very good in quality. Seeds one to six, average four, large, long and broad, blunt, brownish; raphe shows as a distinct cord-like ridge; chalaza small, roughened and frequently with radiating furrows, much above center, variable in shape, distinct.

SCUPPERNONG.[1]

(Rotundifolia.)

1. *Amer. Farmer*, 1:317. 1819. 2. *Ib.*, 3:332. 1822. 3. *Ib.*, 9:29, 30. 1827. 4. *Ib.*, 9:139. 1827. 5. Prince, 1830:167. 6. *Ib.*, 1830:170. 7. Downing, 1845:258. 8. *Horticulturist*, 12:457. 1857. 9. *U. S. Pat. Off. Rpt.*, 1857:231. 10. *Gar. Mon.*, 5:73, 74. 1863. 11. *Grape Cult.*, 1:38, 280, 292. 1869. 12. *Ib.*, 3:60. 1871. 13. *Am. Pom. Soc. Cat.*, 1871:16. 14. *Am. Pom. Soc. Rpt.*, 1881:40, 68, 147, 153, 155. 15. *Gar. Mon.*, 28:140, 173. 1886. 16. *Ala. Sta. Bul.*, 29:18. 1891. 17. *Bush. Cat.*, 1894:177. *fig.* 18. *Am. Gard.*, 20:688. 1899. 19. *Ga. Sta. Bul.*, 53:49, 59. 1901. 20. *N. C. Sta. Bul.*, 187:58, 60. 1903. 21. *S. C. Sta. Bul.*, 132:18. 1907.

American Muscadine (5, 10, of the South 7). *Bull* (9, 17, of the South 7). *Bullace* (9, 17). *Bullet* (17, of the South 7). *Fox grape* of the South (7). GREEN SCUPPERNONG (6). *Green Muscadine* (6). HICKMAN (3). *Hickman* (5, 10). *Muscadine* (9). ROANOKE (4). *Roanoke* (5, 10, 17, of the South 7). *Scuppernong* (3, 4, 5). *White Muscadine* (11, 17). WHITE SCUPPERNONG (5). *Wild green Muscadine* (6). *Yellow Muscadine* (17).

The Scuppernong is preeminently the grape of the South. It is the chief representative of the great species *Vitis rotundifolia*, which runs riot in natural luxuriance from Delaware and Maryland to the Gulf, and westward from the Atlantic to Arkansas and Texas. The name Scuppernong was taken from the Indians and is now common in the geography of North

[1] In the eastern portion of the Southern States, the section where this variety originated and where it is still most largely grown, Scuppernong is applied only to a white variety of *Vitis rotundifolia*. Unfortunately in many portions of the South and in the North, the word Scuppernong is apparently taken as meaning a grape of the southern Fox or Rotundifolia class; thus we find some writers using such contradictory expressions as White Scuppernong, Green Scuppernong, and Black Scuppernong. In the South, at least, this use of the term appears to have arisen in the last fifty years, usage previous to that time being practically unanimous in recognizing that the Scuppernong was the white Rotundifolia which had been selected at an early day for cultivation on account of certain superior cultural characters distinguishing it from the rest of the species.

Carolina; a river, a town, a lake, and a swamp all bear this appellation. Calvin Jones, an agriculturist of note in North Carolina during the early part of the last century, gives the following history of the name as applied to the grape it now distinguishes:[1] "This grape & wine had the name of Scuppernong given to them by Henderson & myself, in compliment to James Blount of Scuppernong, who first diffused a general knowledge of it in several well written communications in our paper—and it is cultivated with more success on that river than in any other part of the state, perhaps, except the Island of Roanoke."

Scuppernong is said to have been found on Roanoke Island at the time of the landing of Sir Walter Raleigh's colony. There is a tradition that an old vine now growing on this island is the original vine. At an early day it was quite common to propagate Scuppernong by seed, pulling out all vines bearing black fruit as soon as the color of the fruit could be determined. Because of this practice it is probable that there are many seminal varieties under the general name Scuppernong. All that seems to be required for a grape to pass under this name is that the vine should be a Rotundifolia and the fruit white.

In the horticultural accounts of the history of Scuppernong it is commonly spoken of as having been found wild during the latter part of the eighteenth century. But Lawson, writing about 1700, in the account quoted on page 37 of this work, describes with sufficient accuracy a white Rotundifolia which could hardly be any other than the Scuppernong. It is, thus, in a sense, a botanical as well as a horticultural variety. Its close relationship to the black form of Rotundifolia is attested by the fact that its seedlings are as often, probably more often, black than white. That Scuppernong is more distinct than the other varieties of Rotundifolia is indicated by the fact that of the ten cultivated varieties of Rotundifolia now grown in the South, James, Thomas, Eden, Meisch, Flowers, Memory, Seedlin, Tenderpulp, Jeter, and Scuppernong as given by Newman,[2] all are black but the last named.

Scuppernong vines are to be found on arbors, in gardens, or half wild, on trees and fences on nearly every farm in the South Atlantic States. As

[1] *Amer. Farmer*, 3:332. 1822.

[2] *S. C. Sta. Bul.*, 132:17, 18. 1907.

a rule, these vines receive little cultivation, are unpruned, and are given no care of any kind, but even under neglect they produce large and sure crops, are almost immune to mildew, rot, phylloxera, or other fungal or insect pests. The plants give not only an abundance of fruit but on arbors and trellises are much prized for their shade and beauty. The growth of the vine is prodigious; seemingly well authenticated reports state that vines are known which cover an acre of land; other tales, having at least the semblance of truth, are equally marvellous. Thus there are accounts of vines of this variety over a hundred years old and which bear 500 bushels of fruit and make 2000 gallons of wine.

The fruit, to a palate accustomed to other grapes, is not very acceptable, having a musky flavor and a somewhat repugnant odor, which, however, becomes with familiarity, it is said, quite agreeable. The pulp is sweet and juicy but is lacking in sprightliness. From the Scuppernong are made several very good wines and it would seem that the future of this and other varieties of Rotundifolia, from a commercial standpoint, lies largely in their value for wine. Quite aside from the quality of the fruit as a table grape, they are not suitable for the market from the fact that the berries drop from the bunch in ripening and become more or less smeared with juice so that as they are brought into market in quantity, their appearance is not at all appetizing.

Vine vigorous to rank, not hardy in the North, very productive. Canes long, numerous, slender, vary from ash-gray to grayish-brown; surface smooth, thickly covered with small, light brown dots; pith greenish; tendrils intermittent, simple. Leaves small, thin; upper surface light green, smooth; lower surface very pale green, slightly pubescent along the ribs, otherwise smooth; veins inconspicuous. Flowers open very late; stamens reflexed.

Fruit ripens late, even in the South, often ripening unevenly, appears to keep well but berries drop as they mature. Clusters small, roundish, not shouldered, loose. Berries very few per cluster, large, roundish, dull green often with brown tinge, not persistent, firm. Skin very thick and tough, covered with many small russet dots; no pigment. Flesh pale green, juicy, tender and soft, fine-grained, very foxy, sweet to agreeably tart, fair to good in quality. Seeds slightly adherent to pulp, large, medium to short, often very broad, not notched, quite blunt, plump, surface unusually smooth, brownish; raphe buried in a narrow, shallow groove; chalaza small, nearly central, elongated, rather obscure. Must 88°.

SECRETARY.

(Vinifera, Riparia, Labrusca.)

1. *Grape Cult.*, 2:158. 1870. 2. *Am. Pom. Soc. Rpt.*, 1871:41, 112. 3. *Mass. Hort. Soc. Rpt.*, 1872:94. 4. *Horticulturist*, 29:328. 1874. 5. *Ohio Hort. Soc. Rpt.*, 1876–7:32. 6. *N. J. Hort. Soc. Rpt.*, 1881:11. 7. *W. N. Y. Hort. Soc. Rpt.*, 27:21. 1882. 8. *Bush. Cat.*, 1883:135. *fig.* 9. *Mass. Hatch Sta. Bul.*, 37:11, 16. 1896. 10. *Tex. Sta. Bul.*, 48:1151, 1162. 1898. 11. *Mich. Sta. Bul.*, 169:176. 1899. 12. *Mo. Sta. Bul.*, 46:41. 1891.

Injured by mildew and rot which nearly every year attack leaves, fruit and young wood, Secretary is able only in exceptional seasons and in favored localities to produce a crop of good grapes. Nevertheless it has many excellent qualities as an amateur grape and should not be lost to cultivation. The fact that it is the result of the fecundation of a Riparia by a Vinifera, both parents being excellent varieties, gives Secretary added interest and value and makes its perpetuation still further worth while.

There is no question as to the rank of the fruit characters of Secretary. Taken together they make it a grape of exceptionally high quality, the berries being meaty yet juicy, fine-grained and tender with a sweet, spicy, vinous flavor. The bunches are large, well formed with medium-sized, purplish-black berries covered with thick bloom, making a very handsome cluster. While the vine and foliage somewhat resemble those of Clinton, one of its parents, the variety is not nearly as hardy, vigorous or productive nor as healthy, falling short in all of these respects and making its culture in New York precarious. Moreover, in any but favored localities in this State, its maturity is somewhat uncertain. These defects of vine have kept Secretary from becoming of commercial importance and make it of value only to the amateur.

Secretary is one of the first productions of Ricketts of Newburgh. He grew the original vine from seed of Clinton fertilized by Muscat Hamburg. Planted in 1867, it is said to have borne a little fruit when one year old from the seed. Specimens of the variety were exhibited before the American Pomological Society in 1871. Ricketts sold the variety about 1875 to S. W. Underhill of Croton Point, New York, who introduced it a few years later. On account of its many weak points it has never been popular and it is apparently not offered for sale by any of the nurserymen to-day.

Vine not uniform in vigor, doubtfully hardy, quite variable in productiveness, inclined to be an uncertain bearer, subject to attacks of fungi. Canes medium to below

SENASQUA

in length, numerous, intermediate in thickness, light brown but conspicuously darker at nodes, surface covered with thin blue bloom; tendrils intermittent, bifid. Leaves small to medium, thin; upper surface light green, nearly dull, smooth; lower surface pale green, almost glabrous; veins indistinct. Flowers semi-fertile, open early; stamens upright.

Fruit ripens soon after Concord, keeps and ships well. Clusters medium to large, long to medium, of average width, cylindrical to tapering, frequently with a medium to large single shoulder, variable in compactness but often loose and with many abortive fruits. Berries large to medium, roundish to oval, somewhat flattened at point of attachment to pedicel, dark purplish-black, glossy, covered with thick blue bloom, persistent, firm. Skin intermediate in thickness, tough with wine-colored pigment. Flesh greenish, juicy, fine-grained, tender, vinous, sweet, good in quality. Seeds separate readily from the pulp, medium to nearly large, broad to medium, slightly notched, long to above medium, dark brown; raphe shows as a moderately distinct cord; chalaza small, above center, distinctly oval. Must 93°.

SENASQUA.

(Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, 1868:10. 2. Downing, 1872:120 app. 3. *Am. Jour. Hort.*, 8:9. 1870. *fig.* 4. *U. S. D. A. Rpt.*, 1875:384. 5. *Bush. Cat.*, 1883:138. *fig.* 6. *N. Y. Sta. An. Rpt.*, 9:327. 1890. 7. *Ib.*, 11:636. 1892. 8. *Ib.*, 17:535, 546, 547. 1898. 9. *Ga. Sta. Bul.*, 53:49. 1901.

It is almost a sufficient characterization of Senasqua to say that it is a Labrusca-Vinifera hybrid. The merits and demerits of the cross-breeds of these two species are so similar in the varieties of them now in cultivation that they can be placed in a group having as few variations as can be found in the parent species. The characters of these hybrid grapes have been well discussed in writing of the varieties sent out by Rogers and the place of Senasqua is well designated when the statement is made that it is very similar to Rogers' hybrids. The vine lacks somewhat in vigor, hardiness, productiveness and health. The grapes are of good quality and when well grown the variety is up to the average of such hybrids in fruit characters so far as the palate is concerned. Unfortunately the berries have a tendency to crack which is aggravated by the fact that the bunches are so compact as to crowd the berries and thus add to the cracking. Senasqua is one of the latest to open its buds and is therefore seldom injured by late frosts. This variety is hardly as well adapted for commercial viticulture as several other such hybrids and can be recommended only for the garden for the sake of variety.

Stephen W. Underhill of Croton Point, New York, originated Senasqua from seed of Concord pollinated by Black Prince. The seed was planted in 1863 and the resulting variety introduced about 1870. This variety, although it attracted much attention at the time of its introduction, was never popular. It was rather widely tested but was soon dropped and is to-day practically obsolete. The foliage and vines of Senasqua show little trace of Vinifera but the descent from the foreign species is plainly marked in the fruit.

Vine variable in vigor, sometimes weak and tender, medium to unproductive, somewhat susceptible to attacks of mildew. Canes short, few in number, above average size, light to dark reddish-brown; nodes enlarged, flattened; internodes short to medium; diaphragm thick; pith of medium size; shoots slightly pubescent; tendrils intermittent, long to medium, trifid to bifid.

Leaf-buds below average size, short, of medium thickness, conical, open very late, tinged on under side and slightly along margin of upper side with light rose-carmine. Leaves intermediate in size and thickness, light green, slightly glossy, medium to somewhat rugose; lower surface whitish-green, pubescent; veins distinct; leaf usually not lobed with terminus acute; petiolar sinus of average depth, medium to narrow; basal and lateral sinuses shallow and narrow when present; teeth intermediate in depth and width. Flowers fertile, open late; stamens upright.

Fruit ripens a little later than Concord, keeps well. Clusters large to medium, intermediate in length, broad to medium, irregularly tapering, usually with a small single shoulder, very compact with uneven surface; peduncle short to medium, thick; pedicel intermediate in length, thick, usually smooth, enlarged at point of attachment to fruit; brush short to medium, green with slight red tinge. Berries above medium in size, roundish, reddish-black to black, covered with heavy blue bloom, persistent, firm. Skin medium to thick, tender, inclined to crack, adheres strongly to the pulp, contains a fair amount of light wine-colored pigment, without astringency. Flesh greenish, translucent, very juicy, tender, meaty, vinous, somewhat spicy, sprightly, good in quality. Seeds separate readily from the pulp, one to five, average two, intermediate in size, rather long, narrow, usually one-sided, light brown; raphe buried in a narrow groove; chalaza small, above center, oval, obscure.

SHELBY.

(Labrusca, Riparia.)

1. *Vineyardist*, Oct. 15, 1893. 2. *Rural N. Y.*, 53:683. 1894. 3. *Bush. Cat.*, 1894:180. 4. *Rural N. Y.*, 55:638, *fig.*, 642. 1896. 5. *N. Y. Sta. An. Rpt.*, 17:535, 546, 547, 557. 1898. 6. *Ga. Sta. Bul.*, 53:49. 1901.

Shelby is hardly worth cultivating in New York. It ripens at a time when there are many other grapes which surpass it in flavor and appearance.

It has, however, been somewhat highly spoken of and grape experimenters may want to try the variety. The name is from Shelby, Ohio, the birthplace of the originator.

D. S. Marvin of Watertown, New York, originated the Shelby about 1880. It was introduced in the fall of 1894. The originator writes that the parentage of this variety is not positively known but it is supposed to be a Labrusca-Riparia cross. The botanical characters of the fruit and vine as it grows on the Station grounds verify this supposition.

Vine vigorous, variable in hardiness, medium to productive. Canes long, numerous, medium to slender; tendrils intermittent, sometimes continuous, bifid to trifid. Leaves uniform in size, green, often thin; lower surface grayish-green with tinge of bronze, strongly pubescent. Flowers fertile or nearly so, open in mid-season or earlier; stamens upright. Fruit ripens early, sometimes before Winchell, does not keep nor ship well. Clusters medium to below in size, short, frequently with a single shoulder, shorter and more compact than Winchell. Berries medium to small, roundish, light green to yellowish-green, covered with thin gray bloom, somewhat inclined to shatter. Skin thin, variable in toughness, peculiarly astringent. Flesh tough, stringy, foxy, sweet from skin to center, mild, fair to good in quality. Seeds do not separate readily from the pulp, not very numerous, medium to below in size, short, broad, plump.

STANDARD.

(Labrusca, Vinifera, Bourquiniana?)

1. *Kan. Hort. Soc. Rpt.*, 1886:187. 2. *Mo. Hort. Soc. Rpt.*, 1892:266. 3. *N. Y. Sta. An. Rpt.*, 11:637. 1892. 4. *Bush. Cat.*, 1894:180. 5. *Va. Sta. Bul.*, 94:130. 1898. 6. *N. Y. Sta. An. Rpt.*, 17:535, 548, 557. 1898. 7 *Mo. Sta. Bul.*, 46:41. 1899.

Burr's No. 2 (1).

Standard is said to be a full sister of Jewel, but it is not equal to the sister nor nearly equal to the reputed parent, Delaware. The variety seems to be thought highly of in the West and it is possible that it has greater value there than in New York. The quality of the grape is high and it is said to make a light-colored wine of good body, taste and aroma, but taking it all and all it does not rise above mediocre and cannot be recommended unless for trial.

The variety was originated by John Burr of Leavenworth, Kansas, from seed of Delaware planted about 1874. It was introduced in 1887 by

Stayman & Black of Leavenworth, Kansas. There are few characters of either vine or fruit that show evidence of having come from Delaware.

Vine variable in vigor, usually hardy in ordinary seasons, productive. Canes short to medium, few in number, rather slender; tendrils continuous to intermittent, bifid to trifid. Leaves not very healthy, medium to small, moderately light green; lower surface tinged with bronze, pubescent. Flowers partly fertile, open in mid-season; stamens upright. Fruit ripens about with Concord, usually keeps fairly well. Clusters not uniform in size, short, frequently with a small single shoulder, compact to medium. Berries small to above medium, roundish, very dark reddish-black covered with a large amount of lilac bloom, sometimes shatter considerably from pedicel. Skin thin, rather tender. Flesh unusually pale green, somewhat stringy, vinous, tender, sweet from skin to center, good in quality. Seeds slightly adherent, medium to small, intermediate in width; chalaza oval, often distinctly above center.

STARK-STAR.

(Labrusca, Vinifera, Aestivalis.)

1. *National Nur.*, 10:128, 133. 1902. 2. *Rural N. Y.*, 62:788. 1903. 3. *Ill. Hort. Soc. Rpt.*, 1903:65, 208, 274, 276. 4. *Mo. Hort. Soc. Rpt.*, 1904:301.

Stark-Star is receiving careful attention in the South and Southwest but unfortunately it does not ripen early enough to promise well for this latitude. On the Station grounds it ripens after Catawba, which does not always mature. If the variety fulfills the high expectations of it in the region of its origin it is worthy a trial in the regions of this State where the Catawba ripens.

The variety was originated by Joseph Bachman of Altus, Arkansas, from seed of Catawba fertilized by Norton or Hermann. The seed was planted about 1892. Stark-Star was introduced by Stark Brothers, of Louisiana, Missouri.

Vine vigorous, hardy, healthy, productive. Canes medium to short, numerous, often slender, roughened; tendrils continuous to intermittent, bifid to trifid. Leaves large to medium, dark green, frequently thin; lower surface pale green, slightly pubescent, cobwebby. Fruit ripens later than Catawba, appears to be an excellent keeper. Clusters large, medium to long, inclined to broadness, frequently with a well marked short single shoulder, very compact. Berries medium to below in size, oval to roundish but frequently compressed on account of compactness of cluster, black when ripe, covered with blue bloom, persistent. Skin intermediate in thickness, tender. Flesh pale

green, not very juicy, tough and solid, slightly aromatic and spicy, almost sweet, fair to good in quality. Seeds adhere somewhat to the pulp, numerous, medium to small, intermediate in length and width, plump; raphe shows as a distinct cord; chalaza distinctly above center to nearly central.

SUPERB.

(Labrusca, Vinifera, Aestivalis.)

1. *Am. Pom. Soc. Rpt.*, 1891:126. 2. *Mo. Hort. Soc. Rpt.*, 1891:126. 3. *Rural N. Y.*, 52:636. 1893. *fig.* 4. *Bush. Cat.*, 1894:180. 5. Husmann, 1895:38. 6. *N. Y. Sta. An. Rpt.*, 18:396. 1899. 7. *Am. Pom. Soc. Cat.*, 1899:28. 8. *Ga. Sta. Bul.*, 53:49. 1901.

The quality of Superb ranges from good to very good but the appearance of the fruit is against the variety. It resembles Eumelan, the reputed parent, in size, shape, and color but is not as attractive. The vine on the Station grounds is not such as to recommend it highly, and since it has been known for at least twenty years without having become at all popular with grape-growers, it may be assumed that the grape has weaknesses elsewhere as well as here.

A. F. Rice of Griswoldville, Georgia, originated this variety, it is said, from seed of Eumelan. The seed was planted in 1880 near South Weymouth, Massachusetts. Superb was placed on the grape list of the American Pomological Society fruit catalog in 1899.

Vine medium to vigorous, usually hardy, healthy, productive. Canes short to medium, few in number, often tapering, ash-gray changing to light or dark brown; tendrils continuous, bifid. Leaves healthy, medium to large, moderately light green; lower surface grayish-green, thinly pubescent, the pubescence being distributed in flecks. Flowers strongly self-fertile, open in mid-season or later; stamens upright. Fruit ripens before Concord, keeps and ships well. Clusters intermediate in size and width, medium to long, frequently with a long, loose single shoulder, compact. Berries medium to below in size, roundish to oval, dark purplish-black covered with thin blue bloom, persistent, not very firm. Skin thick, tough, without astringency. Flesh juicy, tender, aromatic, sweet from skin to center, spicy, good to very good in quality. Seeds separate readily from the pulp, medium to small, medium to long, sharp-pointed; raphe occasionally shows as a partially submerged cord in a broad groove; chalaza distinctly above center.

TAYLOR.

(Riparia, Labrusca.)

1. *Valley Farmer*, 1858:122. 2. *Horticulturist*, 14:486. 1859. 3. *Ib.*, 15:34. 1860. 4. *Gar. Mon.*, 2:68, 119, 163. 1860. 5. *Am. Pom. Soc. Rpt.*, 1860:78. 6. *Horticulturist*, 19:156. 1864. 7. Husmann, 1866:104. 8. Fuller, 1867:231. 9. *Grape Cult.*, 1:44, 74, 242, 291, 296. 1869. 10. *Ill. Hort. Soc. Rpt.*, 1881:161. 11. *Am. Pom. Soc. Rpt.*, 1883:133. 12. *Bush. Cat.*, 1883:20, 138. 13. *Tex. Sta. Bul.*, 48:1151, 1162. 1898. 14. *Mo. Sta. Bul.*, 46:41, 43, 45, 46, 70. 1899. 15. *Ga. Sta. Bul.*, 53:49. 1901.

Bullitt (1, 4). *Bullitt* (3, 5, 7, 9, 11, 12). Taylor (2, 5). *Taylor* (4, 11). Taylor Bullit (13, 14). Taylor's Bullitt (8, 11). *Taylor's Bullitt* (12).

Taylor is hardly known in New York nor, indeed, is it now much grown elsewhere. It is of interest for the part it has played in the grape culture of the past and especially for its worthy offspring. Many of these now outrank the parent in the regions and for the purposes for which Taylor is grown. In truth, the most valuable quality of Taylor seems to be its capacity for transmitting its good characters to its seedlings; some of course fall much below it, as a table or wine grape, but a considerable number quite equal it, and a few surpass it, but all resemble the parent vine much more than is common among grapes. While it is from the species to which Taylor belongs that we must look for our hardiest vines yet this grape and its offspring, though not particularly tender to cold, do best in southern regions as they require a long, warm summer and fall to mature properly. Taylor was long grown in both Europe and California as a grafting stock for the Old World varieties as a protection against phylloxera, and is still somewhat cultivated in these regions for that purpose.

The quality of the fruit of Taylor is from fair to good, the flavor being sweet, pure, delicate and spicy and the flesh tender and juicy, but the bunches are small, the flowers infertile so that the berries do not set well and give very imperfect and unsightly clusters. The skin is such, too, that it cracks badly, a defect that is seemingly transmitted to many of the seedlings of the variety. The vine is strong, healthy, hardy but not very productive. Taylor is essentially a wine grape, and it is not likely that it or many of the varieties bred from it will make table grapes. The wine is said to be exceptionally good, of great body and high flavor.

The original vine of Taylor was a wild seedling found in the early

part of the last century on the Cumberland Mountains near the Kentucky-Tennessee line by a Mr. Cobb who planted the vine on his farm in Shelby County, Kentucky. Later the farm was sold to Cuthbert Bullitt. About 1840, the grape came to the attention of Judge John Taylor of Jericho, Henry County, Kentucky, an enthusiastic amateur horticulturist who secured the vine from Bullitt and sent cuttings to many grape-growers for testing. It was early introduced into the grape region of the middle West where it was widely tested but was never extensively planted owing to its lack of productiveness. Its culture has been on the wane for many years and only an occasional nurseryman in that section handles the variety to-day. This variety has, at different times, passed under the names Bullitt, Taylor, Taylor's Bullitt, with various spellings of the name Bullitt.

The following description has been compiled from various sources:

Vine vigorous to rank, healthy, hardy, variable in productiveness. Leaves small, attractive in color, smooth. Flowers bloom early; stamens reflexed. Fruit ripens about two weeks before Isabella. Clusters small to medium, shouldered, loose to moderately compact. Berries small to medium, roundish, pale greenish-white, sometimes tinged with amber. Skin very thin. Pulp sweet, spicy, fair to good in quality.

TELEGRAPH.

(Labrusca, Aestivalis.)

1. *U. S. D. A. Rpt.*, 1863:549. 2. *Gar. Mon.*, 9:51. 1867. 3. *Ib.*, 10:19, 344. 1868. 4. *Am. Pom. Soc. Cat.*, 1869:42. 5. *Am. Pom. Soc. Rpt.*, 1869:56. 6. *Grape Cult.*, 1:44, 115, 296. 1869. 7. *Gar. Mon.*, 11:83. 1869. 8. *Horticulturist*, 30:73. 1875. 9. *Bush. Cat.*, 1883:82, 139. 10. *W. N. Y. Hort. Soc. Rpt.*, 36:43. 1891. 11. *N. Y. Sta. An. Rpt.*, 11:637. 1892. 12. *Tenn. Sta. Bul.*, Vol. 9:187. 1896. 13. *N. Y. Sta. An. Rpt.*, 17:535, 546, 547, 557. 1898. 14. *Mo. Sta. Bul.*, 46:41, 42, 44, 45. 1899. 15. *Kan. Sta. Bul.*, 110:237. 1902. 16. *Mo. Hort. Soc. Rpt.*, 1906:65, 67.

Christine (2, 3, 7). *Christine* (4, 8, 9, 10, 12). *Telegraph* (2, 3).

The characters of Telegraph are not such as to give it high rank among grapes and now that nearly forty years have passed since its origin, and many better varieties have come into cultivation, the variety is worth mentioning only as a matter of record. Its most remarkable character is compact, well shouldered bunches, making them attractive in appearance though somewhat small for a commercial variety. Telegraph is susceptible to rot and the birds are particularly fond of its fruit. It ripens very early and is of better quality than Hartford — not high praise. The variety is

peculiar in that the ripening season seems to vary from a few days after Hartford to as late as Concord. It is earlier, comparatively, in the South than in the North; that is, in cool summers it matures slowly.

Telegraph, or Christine, as it appears to have first been called, is a chance seedling which appeared about the middle of the last century in the yard of a Mr. Christine, Hestonville, near Westchester, Chester County, Pennsylvania. About 1860 P. R. Freas, editor of the *Germantown Telegraph*, to whom fruit was sent, bestowed upon it the name of his paper, which finally supplanted the original name. It was placed on the grape list of the American Pomological Society fruit catalog in 1869 and removed in 1899. Telegraph is apparently a Labrusca with a strain of Aestivalis.

Vine vigorous, hardy, usually healthy, very productive. Canes unusually long, medium to numerous; tendrils continuous, trifid to bifid. Leaves healthy, medium to large, inclined to roundish, light green; lower surface grayish-white, pubescent. Flowers fertile, open in mid-season or earlier; stamens upright. Fruit usually ripens soon after Hartford but sometimes later, a fair shipper and keeper. Clusters medium to small, often short, broad, cylindrical, blunt at ends, single-shouldered, very compact. Berries intermediate in size, roundish to slightly oval on account of compactness of cluster, dull black covered with a large amount of blue bloom, persistent. Skin intermediate in thickness, tough, does not adhere to the pulp, astringent. Flesh greenish, tough and solid, slightly foxy, pleasant flavor, sweet at skin to tart at center, fair to good in quality. Seeds somewhat adherent and numerous, medium to above in size, variable in shape and size.

TO-KALON.

(Labrusca, Vinifera.)

1. *Mag. Hort.*, 1:459. 1835. 2. *N. Y. Ag. Soc. Rpt.*, 1847:353. 3. *Mag. Hort.*, 21:42, 1855. 4. *Ib.*, 22:507. 1856. 5. *Am. Pom. Soc. Rpt.*, 1856:163. 6. Downing, 1857:345. 7. *Am. Pom. Soc. Rpt.*, 1858:72. 8. *Horticulturist*, 14:299. 1859. *fig.* 9. *Am. Pom. Soc. Rpt.*, 1860:81. 10. *Ib.*, 1862:146. 11. *Am. Pom. Soc. Cat.*, 1862:90. 12. *Gar. Mon.*, 5:73, 74. 1863. 13. Grant, 1864:11. 14. *Gar. Mon.*, 8:362. 1866. 15. *Grape Cult.*, 1:327. 1869. 16. Downing, 1869: 556. 17. *Bush. Cat.*, 1883:139.

The Beautiful (16). CARTER (4). *Carter* (7, 10, 16, 17, of Boston 12). *Spofford Seedling* (16, 17). WYMAN (3). *Wyman* (10, 12, 16, 17).

The fruit characters of To-Kalon are so similar to those of Catawba that it was hardly worthy of introduction. Beside duplicating the Catawba in fruit the vines are not healthy, being very susceptible to mildew and rot, the fruit drops badly, and the crop does not ripen well. The quality of the fruit is very good, once it can be secured. A point in its favor is

that it ripens a little before Catawba. The variety long since ceased to be of commercial importance and can now be found but rarely in collections.

To-Kalon was originated in the early part of the last century by Dr. Spofford of Lansingburg, New York. The originator states that it is a seedling of a European grape, but from its resemblance to Catawba it is supposed by many to have been a seedling of that variety. Wyman and Carter are two varieties of later introduction which are said to be identical with To-Kalon, but as the origin of each is apparently authentic and distinct it appears more probable that they are merely similar sorts. To-Kalon was placed on the list of sorts recommended by the American Pomological Society in 1862 but was dropped from this list in 1871.

The following description has been compiled from various sources:

Vine vigorous to rank, variable in productiveness, hardy, often mildews badly. Foliage large, abundant. Flowers do not always set well. Fruit ripens somewhat earlier than Catawba. Clusters large, shouldered. Berries large, oval to oblate, darker than Catawba, covered with heavy bloom, shells. Pulp sweet, of pure flavor, melting, very good in quality.

TRIUMPH.

(Labrusca, Vinifera.)

1. *Grape Cult.*, 2:295. 1870. 2. *Am. Jour. Hort.*, 9:84. 1871. 3. *Am. Pom. Soc. Rpt.*, 1881:33, 40, 162. 4. Downing, 1881:169 app. 5. *Am. Pom. Soc. Cat.*, 1883:26. 6. *Bush. Cat.*, 1883:140, *fig.*, 141. 7. *Mo. Hort. Soc. Rpt.*, 1884:217. 8. *Am. Pom. Soc. Rpt.*, 1885:104. 9. *N. Y. Sta. An. Rpt.*, 11:637. 1892. 10. *Va. Sta. Bul.*, 94:142. 1898. 11. *N. Y. Sta. An. Rpt.*, 17:535. 548, 557. 1898. 12. *Miss. Sta. Bul.*, 56:17. 1899. 13. *Mich. Sta. Bul.*, 169:176. 1899. 14. *Ala. Sta. Bul.*, 110:89. 1900. 15. *Ga. Sta. Bul.*, 53:49, 52, 59. 1901. 16. *Kan. Sta. Bul.*, 110: 243. 1902. 17. *Traité gen. de vit.*, 5:186. 1903.

Campbell's Concord Hybrid No. 6 (6). *Campbell's Seedling No. 6* (17). *Hybride de Concord No. 6* (17).

When quality, color, shape and size of bunch and berry are all considered, Triumph is one of the finest dessert grapes of America. When at its best it is a magnificent bunch of golden grapes of highest quality, esteemed even in southern Europe where it must compete with the best of the Viniferas, though unfortunately it is nearly as susceptible in that region to phylloxera as the Old World varieties, a defect which has caused its relegation there from commercial vineyards to the collections of experimenters and amateurs. In America its commercial importance is cur-

tailed by the fact that it requires a long season for its proper development and the variety justifies its name only in the South and more particularly in the Southwest. In the latitude of New York it is doubtfully hardy and the short summer season never permits it to attain the quality and beauty which characterize it further south.

Triumph has, in general, the vine characters of the Labrusca parent Concord, especially its habit of growth, vigor, productiveness and foliage characters, falling short in hardiness, resistance to fungal diseases and earliness of maturity. Even in New York the vines are as vigorous and set nearly as much fruit as Concord; but they are injured in cold winters unless protected, and suffer in particular from the mildews. The fruit matures with or a little later than the Catawba. It proves, in regions where it is largely grown, to be quite adaptable to different soils and locations and the small amount of data at hand on this point in New York suggests that this adaptability holds for the grape regions of this State as well. It prefers, if anything, a deep soil to a shallow one and alluvial or clayey soils to lighter lands.

While the vine characters of Triumph are those of Labrusca there is scarcely a suggestion of the coarseness, or of the foxy odor and taste of Labrusca; and the objectionable seeds, pulp, and skin of the native grape give way to the far less objectionable structures of Vinifera. Grapes of this variety do not have the firm and often disagreeable pulpiness of many other similar hybrids, as for instance most of Rogers' hybrids. The flesh is tender and melting and the flavor rich, sweet, vinous, pure and delicate, giving the variety high rank among the best American grapes. In the North, as would be expected from its lack of proper maturity, the flavor is insipid as compared with the same character in the South. The skins of the berries are faulty being more apparent in eating than those of Vinifera and under unfavorable conditions crack badly; because of the tenderness of the skin the variety neither ships nor keeps remarkably well. Triumph is not only one of the best dessert grapes but it is said to make a very good white wine.

There are numerous pure-bred and cross-bred offsprings of Triumph in America which indicate that this variety may be very successfully used in grape-breeding Munson of Texas, in particular, among other viti-

TRIUMPH

culturists, has used it to advantage in breeding work, his Bailey, Big Extra, Big Hope, Carman, Early Golden, Fern Munson, Governor Ross, Newman, Ragan, Rommel, R. W. Munson, W. B. Munson, all having been bred with Triumph as an ancestor.

When all of its qualities and characters are considered, and for all parts of America, it can hardly be disputed that Triumph is the best of the hybrids of the two species from which it comes that has been produced by artificial fertilization. That it does not succeed better in New York is a distinct loss to the viticulture of the State.

Triumph was originated nearly a half century ago by George W. Campbell of Delaware, Ohio, from seed of Concord fertilized by Chasselas Musque (Joslyn's St. Albans). The originator considered it of no value in his vineyard but sent it to Samuel Miller of Bluffton, Missouri, who gave it the name Triumph. It was placed on the grape list of the American Pomological Society fruit catalog in 1883.

Vine vigorous, doubtfully hardy, medium to very productive, somewhat subject to attacks of mildew. Canes medium to long, intermediate in number and thickness, moderately dark brown, surface covered with a slight amount of bloom; nodes enlarged, variable in shape; internodes medium to above in length; diaphragm thick; pith medium in size; shoots slightly pubescent; tendrils intermittent, medium to long, trifid, sometimes bifid.

Leaf-buds large to medium, long and thick, obtuse to conical, open late. Young leaves tinged on under side and along margin of upper side with brownish-carmine. Leaves large, of average thickness; upper surface light green, dull, medium to slightly rugose; lower surface grayish-white, pubescent; veins distinct; leaf usually not lobed with terminus obtuse to acute; petiolar sinus medium to deep, narrow, often closed and overlapping; basal sinus absent; lateral sinus shallow and narrow when present; teeth deep, wide to medium. Flowers fertile, open late; stamens upright.

Fruit ripens with Catawba or later, does not rank among the best keepers. Clusters very large to medium, long, broad, tapering to cylindrical, sometimes single-shouldered, compact; peduncle short to medium, above average thickness; pedicel medium to short, slender, smooth, considerably enlarged at point of attachment to fruit; brush short, pale yellowish-green. Berries medium to above in size, oval, pale green or golden yellow, glossy, covered with heavy gray bloom, persistent, firm. Skin thin, variable in toughness, sometimes inclined to crack, adheres considerably to the pulp, contains no pigment, slightly astringent. Flesh light green, translucent, juicy, fine-grained, tender, somewhat vinous, good to very good. Seeds separate easily from the pulp, one to five,

average three, below medium to small, intermediate in width, long, brownish; raphe sometimes visible being partly submerged in the short shallow groove· chalaza of average size, above center, oval to circular, distinct.

ULSTER.

(Labrusca, Vinifera.)

1. *Bush. Cat.*, 1883:141. 2. *Am. Pom. Soc. Rpt.*, 1885:104. 3. *Ohio Hort. Soc. Rpt.*, 1885-6: 224. 4. *Am. Pom. Soc. Cat.*, 1889:24. 5. *Mo. Hort. Soc. Rpt.*, 1891:128. 6. *Rural N. Y.*, 50:691. 1891. 7. *Ib.*, 51:170, 681. 1892. 8. *N. Y. Sta. An. Rpt.*, 11:637. 1892. 9. *Ill. Sta. Bul.*, 28: 262. 1893. 10. *Bush. Cat.*, 1894:183. 11. *W. N. Y. Hort. Soc. Rpt.*, 39:26 1894. 12. *N. Y. Sta. An. Rpt.*, 17:536, 548, 553, 557. 1898. 13. *Kan. Sta. Bul.*, 110:240. 1902. 14. *Mich. Sta. Bul.*, 205:41. 1903.

Ulster Prolific (1, 2, 3, 5, 9, 11, 13). *Ulster Prolific* (8, 10).

The accompanying color-plate does not do justice to Ulster as to size and beauty of the fruit but it well il ustrates one of the chief faults of the variety. The vines usually set too much fruit in spite of efforts to control the crop by pruning, and two undesirab e results follow: The bunches are small and the vines, lacking vigor at best, fail to fully recover from the over-fruitfulness. Over-productiveness and lack of vigor are the two defects in Ulster that have kept it from becoming of more importance commercially and a greater favorite as a garden grape. The quality of the fruit is very good, being much like that of Catawba both in flesh characters and in flavor. The color of the berries seems to vary greatly, sometimes being nearly as red as Catawba and under other conditions an unattractive green with a reddish tinge. As a rule the fruit keeps well but there are exceptions especially when the variety is not grown under the conditions best suited to it. Ulster has many good qualities but its deficiency in vigor and capriciousness in both vine and fruit characters prevent its becoming a grape of value for either vineyard or garden.

Ulster was originated by A. J. Caywood of Marlboro, New York, and was introduced by the originator about 1885. It was included in the list of sorts recommended by the American Pomological Society in 1899. Its parents are said to be Catawba pollinated by a wild Aestivalis. Both vine and fruit show unmistakable traces of Labrusca and Vinifera, but the Aestivalis characters, if present, are not apparent.

Vine medium to weak, usually hardy, productive, often overbears, sometimes susceptible to attacks of mildew. Canes medium to short, not numerous, slender, mod-

ULSTER

erately dark brown, surface roughened and covered with faint pubescence; nodes enlarged and flattened; internodes short; diaphragm of average thickness; pith intermediate in size; shoots pubescent; tendrils usually intermittent, of medium length, bifid, dehisce early.

Leaf-buds intermediate in size, short to medium, thick, plump, conical to pointed, open rather late. Young leaves faintly tinged on under side and along margin of upper side, which is rather glossy, prevailing color pale green with considerable rose-carmine tinge. Leaves small to medium, thick; upper surface light green, glossy, somewhat smooth; lower surface grayish-white, pubescent; veins distinct; leaf usually not lobed with terminus acute to acuminate; petiolar sinus of average depth, medium to wide; basal sinus absent; lateral sinus a mere notch when present; teeth shallow to medium, above medium width. Flowers fertile or nearly so, open rather early; stamens upright.

Fruit usually ripens with Concord or a little later, keeps and ships well. Clusters intermediate in size, above average length, intermediate in breadth, cylindrical to slightly tapering, often single-shouldered, compact; peduncle short, slender; pedicel intermediate in length, slender to medium, covered with numerous warts; brush short, yellowish-green. Berries above medium to medium in size, roundish to roundish-oval, rather dark dull red but do not always color well, covered with thin light to dark lilac bloom, persistent, of average firmness. Skin thick, tough, adheres slightly to the pulp, contains no pigment, somewhat astringent. Flesh pale green, translucent, juicy, tender, fine-grained, faintly aromatic, slightly foxy, sweet next the skin to tart at center, good to very good in quality. Seeds separate easily from the pulp, one to six, average three, medium to above in size, variable in length and breadth, somewhat plump, brownish; raphe obscure; chalaza intermediate in size, above center, oval to circular, not distinct; surface of seeds slightly roughened.

UNION VILLAGE.

(Labrusca, Vinifera?)

1. Elliott, 1854:247. 2. *U. S. Pat. Off. Rpt.*, 1856:433. 3. *Am. Pom. Soc. Rpt.*, 1856:39, 165. 4. Downing, 1857:346. 5. *Am. Pom. Soc. Rpt.*, 1858:69. 6. *Am. Pom. Soc. Cat.*, 1858:235. 7. *Mag. Hort.*, 24:92, 94. 1858. 8. *Horticulturist*, 14:74. 1859. *fig.* 9. *Mass. Hort. Soc. Rpt.*, 1860:49. 10. *Am. Pom. Soc. Rpt.*, 1860:89. 11. *Mag. Hort.*, 27:533. 1861. 12. *Horticulturist*, 16:234. 1861. *fig.* 13. *Am. Pom. Soc. Rpt.*, 1862:146. 14. *Mag. Hort.*, 29:422. 1863. 15. *Ib.*, 31:103. 1865. 16. Mead, 1867:198. 17. *Grape Cult.*, 1:43, 44, 151, 239, 262, 327. 1869. 18. *Bush. Cat.*, 1883:142. 19. *Am. Pom. Soc. Rpt.*, 1883:59.

Imitation Hamburg (1). Ontario (8, 9, 10, 14). *Ontario* (13, 15, 16, 17, 18, 19). Shaker (2). *Shaker* (4, 17, 18).

Rampant in vine, with thick wood, large coarse leaves, bunches and berries, Union Village is marked by grossness in all of its characters. Its vigor of vine and showiness of fruit attracted the attention of the viti-

culturists of a half century ago and it was then quite commonly grown but has now been almost wholly discarded because of poor quality, susceptibility to disease, and lack of hardiness. It ripens somewhat late and quite unevenly. It might prove of some value in breeding for the characters for which, even among the largest and most vigorous grapes of to-day, it is distinguished.

This variety was originated by the Shakers at Union Village, Warren County, Ohio. It was introduced by Nicholas Longworth of Cincinnati about the middle of the last century. In 1858 it was placed on the American Pomological Society's list of grapes that promise well and in 1862 was placed on the regular list of recommended sorts. Here it remained until 1883, when it was dropped. Ontario, another grape of this type, which was originated by W. H. Read of Port Dalhousie, Ontario, was considered by many synonymous with Union Village but the evidence seems to show that, though very similar, it had a distinct origin. Union Village is said to be a seedling of Isabella. The characters generally indicate Labrusca although the lobing of the leaves and the susceptibility to fungi may indicate a strain of Vinifera.

The following description has been compiled from various sources:

Vine vigorous to rank, usually productive, somewhat tender, subject to attacks of fungi. Canes large, long; internodes short. Leaves coarse and large. Fruit ripens about one week before Isabella, matures unevenly. Clusters large to very large, often shouldered, compact. Berries large to very large, roundish, dark purplish-black covered with heavy bloom, shell badly. Skin moderately thin. Flesh tart, resembling Isabella somewhat in flavor, quality fair to good.

VERGENNES.

(Labrusca.)

1. *Am. Pom. Soc. Rpt.*, 1881:34, 117. 2. Barry, 1883:450. 3. *Am. Pom. Soc. Cat.*, 1883:26. 4. *W. N. Y. Hort. Soc. Rpt.*, 29:19, 112. 1884. 5. *Am. Pom. Soc. Rpt.*, 1885:103, 105. 6. *Ohio Hort. Soc. Rpt.*, 1886–7:172. 7. *N. Y. Sta. An. Rpt.*, 9:330. 1890. 8. *Ill. Sta. Bul.*, 28:262. 1893. 9. *Bush. Cat.*, 1894:184. *fig.* 10. *Gar. and For.*, 8:487. 1895. 11. *N. Y. Sta. An. Rpt.*, 17:536, 542, 543, 544, 548, 553. 1898. 12. *Ib.*, 18:383, 389, 396. 1899. 13. *Mo. Sta. Bul.*, 46:41, 43, 44, 45, 53, 76. 1899. 14. *Mich. Sta. Bul.*, 169:176. 1899. 15. *Kan. Sta. Bul.*, 110:237. 1902. 16. *Ont. Fr. Gr. Assoc. Rpt.*, 34:99. 1902.

While not one of the leading commercial varieties in New York, Vergennes has steadily increased in popularity during the thirty years since

VERGENNES

its introduction. One of the most valuable attributes of Vergennes is that it seldom fails to bear a crop though it has a tendency to overbear which causes it to be variable in size of fruits and in time of ripening; with a moderate crop it ripens with Concord but with a heavy load of grapes the crop matures from one to two weeks later. Vergennes is somewhat unpopular with vineyardists because of the sprawling habit of the vine making a vineyard of this grape untractable for vineyard operations. This fault is obviated somewhat by grafting it on other vines. In some of the grape regions of New York the vines are precariously hardy though tenderness to cold can hardly be said to be a serious fault of the variety.

The appearance of the fruit is attractive and while the quality is not high, yet it is good; the flavor is agreeable, the flesh is tender and seeds and skin are not objectionable. Considering all of its fruit characters, Vergennes may be said to be more than an ordinary grape — much better than several better known commercial varieties. The variety is somewhat remarkable in being probably the best shipper and the best keeper among the pure Labrusca varieties. Nearly all of the grapes which ship and keep well have more or less Vinifera blood, but if Vergennes has any foreign blood it shows it only in its keeping and shipping qualities. At present Vergennes is the standard late-keeping grape for this region being very commonly found in the markets as late as January and sometimes February. A number of seedlings of Vergennes, pure-bred and cross-bred, growing on the Station grounds, show that this variety transmits its characters well to its offspring indicating that it has value for grape-breeding. Vergennes may be recommended for its intrinsic value for the vineyard and the garden and to the experimenter as one of the best pure Labruscas for the production of new and improved varieties.

The original vine of this variety was a chance seedling found in the garden of William E. Greene, Vergennes, Vermont. It fruited for the first time in 1874. It was placed on the list of sorts recommended by the American Pomological Society in 1883 and is still retained.

Vine variable in vigor, not always hardy, medium to very productive depending upon amount of winter injury, usually healthy. Canes long to medium, intermediate in number and size, dark dull brown; nodes enlarged, strongly flattened; internodes

of average length; diaphragm thick; pith medium in thickness; shoots pubescent; tendrils continuous, long to medium, bifid or sometimes trifid.

Leaf-buds large to medium, long, thick; open very late. Young leaves tinged on under side and along margin of upper side with rose-carmine. Leaves large to medium, thin; upper surface light green, glossy, somewhat rugose; lower surface pale green, very pubescent; veins indistinct; leaf usually not lobed with terminus broadly acute; petiolar sinus of average depth, medium to wide; teeth shallow, often wide. Flowers nearly sterile, open in mid-season; stamens upright.

Fruit variable in season but usually ripens one to two weeks later than Concord, keeps and ships well. Clusters intermediate in size and length, broad, cylindrical to tapering, sometimes single-shouldered, variable in compactness but inclined to be loose; peduncle short to medium, thick; pedicel intermediate in length and thickness, covered with numerous small warts, enlarged at point of attachment to fruit; brush slender, short, pale green. Berries large to below medium, oval to roundish, light and dark red, covered with lilac bloom, persistent, medium in firmness. Skin does not crack, thick, tough, adheres considerably to the pulp, contains no pigment, astringent. Flesh pale green, juicy, fine-grained, somewhat stringy, tender, vinous, sweet next the skin, agreeably tart at center, good to very good in quality. Seeds separate easily from the pulp, one to five, average three, variable in size, length and breadth, not notched, usually blunt, brownish; raphe distinct; chalaza small, plainly above center, usually roundish, often with shallow radiating furrows, distinct.

VICTORIA.

(Labrusca, Vinifera.)

1. *Am. Pom. Soc. Rpt.*, 1883:92. 2. *Ib.*, 1885:104. 3. *Mo. Hort. Soc. Rpt.*, 1891:129. 4. *Rural N. Y.*, 50:691, 847. 1891. 5. *N. Y. Sta. An. Rpt.*, 11:637. 1892. 6. *Del. Sta. An. Rpt.*, 7:135, 139. 1895. 7. *Rural N. Y.*, 56:822. 1897. 8. *N. Y. Sta. An. Rpt.*, 17: 536, 548, 557. 1898. 9. *Mich. Sta. Bul.*, 169:176. 1899. 10. *Ga. Sta. Bul.*, 53:49. 1901.

As a green seedling of Concord, Victoria has much in common with others of its kind that have come from this parent. In particular it resembles Hayes but does not equal it, being of poorer quality and having smaller and less attractive fruits; neither does it equal Martha. Victoria is marked by having more foxiness in flavor than do most of the white seedlings of Concord. In view of the many good green grapes, there is little about Victoria to recommend it,—there are many commonplace grapes of its color and season quite its equal.

This variety was originated by T. B. Miner of Linden, Union County, New Jersey, about 1871.

Vine of medium vigor, usually hardy, productive, subject to attacks of mildew in unfavorable locations. Canes medium to short, not numerous, slender; tendrils continuous, trifid to bifid. Leaves medium in size, dark green; lower surface pale green with tinge of bronze, covered with short down. Flowers nearly fertile, open in mid-season; stamens upright. Fruit ripens about with Concord, does not keep well. Clusters average in size, long, inclined to slender, often single-shouldered, compact. Berries intermediate in size, roundish, light green with pale yellow tinge, covered with thin gray bloom, persistent. Skin thin, tender. Flesh pale green, slightly tough, foxy, sweet at skin to acid at center, good in quality. Seeds do not separate readily from the pulp, medium to below in size, of average width and length.

WALTER.

(Vinifera, Labrusca, Bourquiniana.)

1. *Mag. Hort.*, **31**:120. 1865. 2. *Ib.*, **33**:7, 54. 1867. 3. *Horticulturist*, **23**:359, 360. 1868. *fig.* 4. *Grape Cult.*, **1**:307, 327, 329. 1869. 5. *Am. Jour. Hort.*, **6**:342. 1869. *fig.* 6. *Ib.*, **8**:144, 299. 1870. 7. *Am. Pom. Soc. Cat.*, **1871**:10. 8. *Am. Pom. Soc. Rpt.*, **1875**:39. 9. *Ib.*, **1883**:59, 154. 10. *Bush. Cat.*, **1894**:185. *fig.* 11. *Tex. Sta. Bul.*, **48**:1151, 1163. 1898. 12. *Ga. Sta. Bul.*, **53**:49. 1901. 13. *Kan. Sta. Bul.*, **110**:243. 1902.

Were it not almost impossible to grow healthy vines of Walter it would take rank among the best of our American grapes. But stunted by fungi which nearly every year attack leaves, young wood and fruit, it is only possible in exceptionally favorable seasons to produce a crop of grapes with this variety. Not infrequently the attacks of mildew are so severe that the vines are defoliated before mid-season. Besides its susceptibility to cryptogamic diseases the variety is fastidious as to soils and even in localities to which it seems adapted it is variable in growth. While not to be classed among the tender grapes yet it is injured in severe winters, and is almost certain to suffer some injury after defoliation by fungi. There are several reports at hand which seem to show that it is hardier and more vigorous on the roots of hardy, strong-growing varieties.

As if to atone for the faults of the vine the fruit of Walter is almost perfect, lacking only in the size of bunch and berry. The bunch and berry resemble Delaware, one of its parents, while it has the peculiar flavor of Diana, the other parent. Well grown, the fruit is more attractive than that of Delaware but it cannot be said that the quality is quite the equal of that of either of its parents. It does not have the fault of ripening

its berries unevenly, one of the defects which debars Diana from profitable cultivation. Though more fastidious, Walter is usually adapted to conditions under which Delaware thrives. The variety has been cultivated for nearly half a century but is seemingly less and less grown, a fact to be regretted; for there are few American grapes of more exquisite flavor and aroma and more dainty appearance. It is said that when protected from dew by walls or other shelter the vines are not so badly attacked by fungi, if at all, and that Walter may thus be grown to perfection. If this be true grape-lovers should see that the variety is long retained in collections and for the garden.

A. J. Caywood originated this variety about 1850 from seed of Delaware pollinated by Diana. It was placed on the grape list of the American Pomological Society fruit catalog in 1871. Walter is still to be found in an occasional varietal vineyard but it is seldom offered for sale by nurserymen.

Vine moderately vigorous, not hardy in exposed locations, variable in productiveness, subject to attacks of fungi. Canes medium to above in length and size, dark reddish-brown, surface covered with thin blue bloom; nodes enlarged, flattened; internodes medium to above in length; diaphragm thick; pith of fair size; shoots pubescent; tendrils intermittent, medium to above in length, bifid.

Leaf-buds small, intermediate in length and thickness, pointed to conical. Foliage of average size, thick; upper surface dark green, glossy, smooth; lower surface tinged with bronze, heavily pubescent; lobes none to three with terminus acute; petiolar sinus of average depth, narrow to medium; basal sinus lacking; lateral sinus usually a notch if present; teeth intermediate in depth and width. Flowers open in mid-season; stamens upright.

Fruit somewhat variable in season of ripening, averaging about with Delaware, keeps and ships well. Clusters medium in size and length, broad, cylindrical to tapering, usually single-shouldered, compact; peduncle short to medium, of average thickness; pedicel medium in length, slender, covered with small scattering warts; brush short, slender, green with brownish tinge. Berries small to medium, often strongly ovate, red, much like Delaware, glossy, covered with a moderate amount of lilac bloom, persistent, firm. Skin intermediate in thickness, very tough, adheres but slightly to the pulp, contains no pigment, without astringency. Flesh pale green, translucent, juicy, tough, somewhat foxy, vinous, quite strongly aromatic, sweet next the skin to tart at center, good to very good in quality. Seeds do not separate easily from the pulp, one to four, average three, below medium in size and length, intermediate in

WALTER

width, medium to sharp-pointed, light brown; raphe obscure; chalaza large, above center, irregularly circular, distinct. Must 100°.

WAPANUKA.

(Labrusca, Riparia, Vinifera, Bourquiniana.)

1. *Tex. Sta. Bul.*, 56:280. 1900. 2. *Rural N. Y.*, 60:937. 1901. 3. *Ib.*, 62:790. 1903. 4. *Iowa Hort. Soc. Rpt.*, 1904:228. 5. *Mo. Hort. Soc. Rpt.*, 1904:305. 6. *Ill. Hort. Soc. Rpt.*, 1905:302.

Though there are many qualities to commend Wapanuka, yet it is not as popular in the North as was expected it would become at the time of its introduction. The chief reason for its failure is that it does not ship well, seemingly a prime requisite for a commercial grape in New York, though the markets are seldom far distant. It is probable, too, that the flavor is not quite as high in this latitude as in the South, or it may be that the grapes with which we compare it here are better flavored than in the South. At any rate it does not have the comparatively high quality in New York that it is reported to have elsewhere, being too insipid. There is a tendency, too, for the grapes to shatter. The fruits when well grown are attractive and the quality is from fair to good. Wapanuka is worthy a trial in commercial vineyards; and because of the handsome appearance and distinct flavor of the fruit it deserves a place in the garden.

Munson of Texas, originated Wapanuka from seed of Rommel fertilized by Brilliant. It was introduced by the originator in the fall of 1898.

Vine vigorous, usually hardy, productive. Canes medium to short, intermediate in number and size, dark reddish-brown, often with ash-gray tinge; tendrils continuous, bifid to trifid. Leaves large, moderately light green, somewhat rugose on older leaves; lower surface dull green tinged with bronze, pubescent. Flowers fertile or nearly so, open before mid-season; stamens upright. Fruit ripens about with Concord, does not keep well. Clusters intermediate in size, long to medium, frequently with a long-peduncled single shoulder, compact. Berries large, roundish, very pale yellowish-green, covered with thin gray bloom, with a tendency to shatter, soft. Skin covered with few, small, dark dots, very thin and tender. Flesh unusually pale green, tender, somewhat foxy, sweet and mild, good in quality. Seeds separate easily from the pulp, intermediate in size, broad, distinctly notched, short.

WHITE IMPERIAL.

(Vinifera, Labrusca, Bourquiniana.)

1. *Mo. Hort. Soc. Rpt.*, 1883:78. 2. *Ib.*, 1892:270. 3. *Bush. Cat.*, 1894:186. 4. *Va. Sta. Bul.*, 94:142. 1898. 5. *Mich. Sta. Bul.*, 169:177. 1899. 6. *Ga. Sta. Bul.*, 53:50. 1901.

White Imperial is one of Stayman's[1] numerous productions. The originator thought it one of the most valuable, if not the most valuable, of his white grapes. As the variety grows in the Station vineyard the fruit is neither especially attractive in appearance nor of very high quality though better in the latter respect than the average. White Imperial is one of a somewhat large number of offspring of Dutchess now known to viticulture in which the good qualities of the parent have been transmitted in a large measure to the progeny. White Beauty, described in the next chapter, is of the same parentage and is similar in general characters of vine and fruit, though berries and bunches are a little larger and the vines a little more vigorous. White Imperial was introduced with great expectations in the West, but, especially in the vineyards of Missouri, while

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[1] Dr. Joseph Stayman was born in Cumberland County, Pennsylvania, in 1817. The family was of German descent and had long been identified with the Mennonites of the region of his birthplace. Stayman's father was a farmer and miller and during early life the son was engaged in these occupations. In 1839 he accompanied his parents to Ohio, where he was engaged in the milling business with his father for a time and later entered the lecture field and studied medicine. In 1849 he married and established his home in Carlisle, Pennsylvania, removing two years later to Abingdon, Illinois. For several years he practiced medicine but in 1858 purchased a nursery which was the beginning of his connection with the fruit business. In 1860 he removed to Leavenworth, Kansas, where he lived the remainder of his life, dying at his home in that city in 1903.

Dr. Stayman was a man of great originality and had varied interests. In plant-breeding he worked with strawberries, apples, raspberries and grapes, producing among others the Clyde strawberry, the Stayman apple and a host of varieties of grapes. Of his named sorts of grapes there are: Black Imperial, Cherokee, Concordia, Daisy, Darwin, Exquisite, Marsala, Mary Mark, Mrs. Stayman, Osceola, Oscaloosa, Oswego, Ozark, Pawnee, Perfection, Prolific, Snowflake, White Beauty, White Cloud and White Imperial.

Stayman and John Burr were neighbors and friends, and held similar opinions as to the best methods of procedure in originating new varieties. Neither believed in artificial pollination but grew the several varieties from which crosses were desired in close proximity and then planted seed from the best developed fruits. Their methods certainly gave them varieties with a high standard of excellence. Stayman may be regarded as one of the leading viticulturists of the Great Plains region. He was, too, one of the pioneers of America in breeding fruits. His many contributions to our lists of fruits make his name memorable to fruit-growers and lovers of fine fruits.

still grown somewhat is not holding its own with better known grapes of its class

White Imperial was produced by Dr. J. Stayman of Leavenworth, Kansas, from seed of Dutchess. The variety was introduced about twenty-five years ago by Stayman & Black.

Vine medium to very vigorous, hardy, variable in productiveness, susceptible to attacks of fungi under unfavorable conditions. Canes intermediate in length, rather numerous, inclined to slender; tendrils continuous to intermittent, bifid to trifid. Leaves above average size, intermediate in color and thickness; lower surface pale green, often with considerable pubescence, slightly cobwebby. Flowers partly sterile, open early; stamens upright. Fruit ripens about a week before Delaware, keeps well. Clusters variable in size, intermediate in length, slender, frequently single-shouldered, variable in compactness. Berries medium to small, oval to roundish, light green, sometimes with a yellow tinge, covered with thin gray bloom, persistent. Skin sprinkled with reddish-brown dots, thin, tender, without astringency. Flesh pale green, fine-grained, tough, sweet at skin to agreeably tart at center, somewhat sprightly, good to best in quality. Seeds not numerous, medium to small, sharp-pointed.

WILDER.

(Labrusca, Vinifera.)

1. *Mass. Hort. Soc. Rpt.*, **1861**:68. 2. *Horticulturist*, **18**:98. 1863. 3. *Ib.*, **21**:325. 1866. *fig.* 4. Mead, **1867**:205, 207. 5. *Am. Pom. Soc. Cat.*, **1867**:44. 6. *Horticulturist*, **24**:126. 1869. 7. *Grape Cult.*, **1**:181. 1869. 8. *Ib.*, **2**:29, *fig.*, 30. 1870. 9. *Am. Pom. Soc. Rpt.*, **1881**:40, 42, 123, 138, 153, 162, 168. 10. *Ill. Hort. Soc. Rpt.*, **1883**:81. 11. *Bush. Cat.*, **1894**:187, *fig.*, 188. 12. *Va. Sta. Bul.*, **94**:136. 1898. 13. *N. Y. Sta. An. Rpt.*, **17**:537, 548, 553. 1898. 14. *Mo. Sta. Bul.*, **46**:41, 43, 44, 46, 64, *fig.* 1899. 15. *Ala. Sta. Bul.*, **110**:70, 89. 1900. 16. *Kan. Sta. Bul.*, **110**:243. 1902.

Rogers' No. 4 (1, 2, 3, 4, 5). *Rogers' No. 4* (6, 7, 8, 9, 10, 11, 15).

The accompanying color-plate scarcely does Wilder justice as to size of bunch and berry but were the illustration somewhat enlarged it would be very typical of the variety. The berries when fully ripe are quite similar in size and color to Black Hamburg but the bunches have fewer berries than the European parent and the quality, as would be expected, is not so good, falling short chiefly in flesh characters. While Wilder is surpassed in quality, and, as usually grown, in appearance by other of Rogers' hybrids, it is one of the most reliable of all of them for vineyard culture, the vines being vigorous, hardy, fairly productive, and, though somewhat

susceptible to mildew, as healthy as any of the hybrids of Labrusca and Vinifera. Wilder is not as well known in the markets as it should be, and now that fungal diseases can be controlled by spraying, this, with other such hybrids, should be more generally planted in commercial vineyards and especially for local and special markets. The wine from this, and for that matter from any of Rogers' grapes, is not of quality such as recommends it and neither are the grapes suitable for grape juice. Surplus fruit would often, therefore, be a loss in large plantations.

Wilder is one of the forty-five Labrusca-Vinifera hybrids raised by E. S. Rogers of Salem, Massachusetts. For an account of its origin and parentage, see Rogers' Hybrids. The first notes as to the qualities of this variety were published in 1858. The variety was placed on the American Pomological Society list of recommended sorts in 1867 and has never been removed. In 1869, Rogers expressing a desire to name one of his seedlings after Marshall P. Wilder, Mr. Wilder selected this one as in his estimation the best of all Rogers' hybrids and it was given his name.

Vine medium to very vigorous, hardy, productive, somewhat susceptible to attacks of mildew. Canes long, moderately numerous, often below average thickness, ash-gray to dark reddish-brown with darker tinge at the nodes which are usually not flattened; internodes long; diaphragm of average thickness; pith intermediate in size; shoots thinly pubescent; tendrils intermittent, medium in length, bifid to trifid.

Leaf-buds of average size, short, thick, roundly obtuse to conical, open early. Young leaves tinged on lower side and along margin of upper side with rose-carmine. Leaves large, often irregularly roundish, of average thickness; upper surface dark green, glossy, smooth; lower surface pale green, pubescent; veins distinct; usually not lobed with terminus acute to obtuse; petiolar sinus deep, narrow, often closed and overlapping; basal sinus lacking; lateral sinus shallow, narrow, or a mere notch when present. Flowers sterile, open mid-season or earlier; stamens reflexed.

Fruit ripens with Concord or earlier, keeps and ships fairly well. Clusters variable in size but are not large, short and broad, irregularly tapering, heavily single-shouldered, sometimes double-shouldered, loose; peduncle of average length, thick; pedicel long, thick, covered with numerous, prominent warts; brush of fair length, thick, green with tinge of light red. Berries large, slightly oval, purplish-black to black, not glossy, covered with heavy blue bloom, persistent, firm. Skin thick, variable in toughness, adheres somewhat to the pulp, with bright red pigment, astringent. Flesh greenish, translucent, juicy, tender, has some Vinifera sprightliness, sweet at skin to tart at the seeds,

WILDER

good in quality. Seeds adherent to the pulp, one to five, average three, above medium in size, often long, intermediate in breadth, light brown; raphe sometimes shows as a partially submerged cord; chalaza small, above center, oval, distinct.

WINCHELL.

(Labrusca, Vinifera, Aestivalis.)

1. *N. Y. Sta. An. Rpt.*, 4:224. 1885. 2. *Am. Pom. Soc. Rpt.*, 1887:91. 3. *N. Y. Sta. An. Rpt.*, 7:105, 108. 1888. 4. *Rural N. Y.*, 47:675. 1888. *fig.* 5. *Gar. and For.*, 2:24, 432. 1889. 6. *Ohio Hort. Soc. Adv. Rpt.*, 1890:21. 7. *N. Y. Sta. An. Rpt.*, 9:331. 1890. 8. *Am. Pom. Soc. Rpt.*, 1891:151. 9. *Rural N. Y.*, 50:691, 705. 1891. 10. *Ib.*, 51:19, 63, 633, 681. *fig.* 1892. 11. *Bush. Cat.*, 1894:130, 131, *fig.*, 188. 12. *Wis. Sta. An. Rpt.*, 13:223. 1896. 13. *Am. Pom. Soc. Cat.*, 1897:19. 14. *Mo. Sta. Bul.*, 46:39, 42, 45, 46, 50, 54, 76. 1899. 15. *Rural N. Y.*, 58:23. 1899. 16. *Mich. Sta. Bul.*, 169:177. 1889. 17. *Ala. Sta. Bul.*, 110:82. 1900. 18. *Kan. Sta. Bul.*, 110:236, 238. 1902.

Green Mountain (3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 17, 18). *Green Mountain* (10, 11, 12, 13, 16). *Winchell* (6, 9, 14, 17, 18).

Winchell is at once very early and of very good quality, characters seldom found combined in grapes. But this is not all that can be said; the vines are vigorous, hardy, healthy, productive, and the fruit keeps and ships well, altogether making a most admirable early grape. Unfortunately the berries, and under some conditions the bunches, are small, and this, combined with the fact that green grapes are not as popular as black and red ones, has kept Winchell from being as largely planted as it otherwise would have been. Then, too, as has been noted before, the competition from the South, in which larger, cheaper and as good grapes compete with early northern crops of this fruit, is limiting the production of early varieties of grapes in the North.

There are some minor faults, too, which under some conditions become drawbacks to the culture of Winchell. At best the bunch of this variety is loose and characterized by a large shoulder. Sometimes this looseness becomes so pronounced as to give a straggling, poorly-formed cluster; so, too, the shoulder when as large as the c uster itself, which often happens, makes the cluster unsightly. There is a tendency, under some conditions, for the grapes to shell when fully ripe and this is often a serious fault. Again, while the crop usually ripens evenly yet there are seasons when two pickings are needed because of unevenness in ripening. Lastly the skin is thin and there is danger in unfavorable seasons, or in shipping, of

the berries cracking though this is seldom a serious fault. These defects do not begin to offset the several good characters of Winchell and it is, for New York at least, the standard early green grape and deserving to rank with the best early grapes of any color.

The original vine of this variety was raised by James Milton Clough of Stamford, Bennington County, Vermont, about the middle of the last century from seed of an unknown purple grape. For some years it had a local reputation and was propagated by some of Clough's neighbors. By what name it was then known does not appear. In December, 1885, according to their statements, Ellwanger & Barry of Rochester, New York, received this variety from C. E. Winchell, then of Stamford. In 1888, this firm introduced the variety to the trade. The same year there was introduced by Stephen Hoyt's Sons of New Canaan, Connecticut, a variety under the name Green Mountain. This firm states that they bought the variety from James M. Paul, of North Adams, Massachusetts, in December, 1885. Previous to his sale Paul had sent a vine of the grape to this Station; he exhibited fruit of Green Mountain before the American Pomological Society in 1887, but without any name.

Later grape-growers found that Winchell and Green Mountain were very similar or identical. Unfortunately, in the meantime, Paul had died and no one knows positively where he secured his vines although there is every reason to believe they were from Mr. Clough. Those who consider the Winchell and Green Mountain separate varieties say the Winchell has larger berries and is somewhat later in ripening than the Green Mountain. Though unable to make a close comparison of vines and fruits of the two supposed varieties, the authors of *The Grapes of New York* choose to consider them so nearly identical, if not identical, as to pass under one name which should be the one first published, Winchell.

Although the botanical characters of this variety are chiefly Labrusca, the thin bloom which sometimes shows on the canes, the occasional intermittent tendrils, and the lobing of the leaf, indicate slight admixtures of Vinifera and Aestivalis.

Vine vigorous, hardy, healthy, very productive. Canes long to medium, numerous, slender, medium dark brown, surface covered with very thin bloom; nodes enlarged, flattened; internodes above medium to short; diaphragm thick; pith medium to below

WINCHELL

in size; shoots pubescent; tendrils continuous, sometimes intermittent, of average length, bifid.

Leaf-buds medium to below in size, short to medium, thick, open early. Young leaves faintly tinged on under side only with faint rose-carmine. Leaves large to medium, of average thickness; upper surface light green, glossy, smooth to medium; lower surface dull green, tinged with bronze, faintly pubescent; lobes three to five with terminal lobe acute to acuminate; petiolar sinus deep, of medium width; basal sinus shallow, intermediate in width; lateral sinus variable in depth and width; teeth shallow, moderately wide. Flowers fertile, open about mid-season or somewhat earlier; stamens upright.

Fruit ripens very early, sometimes before Moore Early, keeps and ships well for an early grape. Clusters large to below medium, long, slender, cylindrical to slightly tapering, often with a long single shoulder, loose to moderately compact; peduncle long, moderately slender; pedicel short, slender, covered with few, small, inconspicuous warts; brush greenish-white. Berries above medium to small, roundish, light green, covered with thin white bloom, usually persistent, soft. Skin often marked with small reddish-brown spots, thin, tender, adheres very slightly to the pulp, contains no pigment, slightly astringent. Flesh greenish, translucent, juicy, tender, fine-grained, sweet; very good to best in quality. Seeds separate fairly well from the pulp, one to four, average two, small, plump, moderately wide and long, blunt, brownish; raphe obscure, chalaza small, slightly above center, circular, not distinct.

WOODRUFF.

(Labrusca, Vinifera?)

1. *Am. Pom. Soc. Rpt.*, **1881**:44, 65. 2. *Ib.*, **1885**:107, 108. 3. *Ohio Hort. Soc. Rpt.*, **1887-8**: 87, 209. 4. *Ib.*, **1888-9**:16. 5. *Am. Pom. Soc. Cat.*, **1889**:24. 6. *Gar. and For.*, **3**:490, 599. 1890. 7. *W. N. Y. Hort. Soc. Rpt.*, **1890**:179. 8. *N. Y. Sta. An. Rpt.*, **11**:638. 1892. 9. *Ill. Sta. Bul.*, **28**:262. 1893. 10. *Bush. Cat.*, **1894**:188. *fig.* 11. *N. Y. Sta. An. Rpt.*, **17**:537, 545, 546, 548, 553. 1898. 12. *Mich. Sta. Bul.*, **169**:177. 1899. 13. *Ib.*, **194**:50. 1901. 14. *Kan. Sta. Bul.*, **110**:238. 1902. 15. *Kan. Hort. Soc. Rpt.*, **1904-05**:228.

Woodruff Red (1, 2, 3, 4, 5, 6, 7, 8, 9, 14). *Woodruff Red* (10).

Woodruff is a handsome, showy, brick-red grape with large clusters and berries. While very attractive in appearance its taste belies its looks, for the flesh is coarse and the flavor foxy. In spite of its attractive appearance, Woodruff would scarcely be worth attention were it not for its excellent vine characters. The vines are hardy, vigorous, productive and fairly healthy. In appearance it is a typical strong-growing Labrusca with the varied adaptabilities of that species for soils and ability to withstand

adverse conditions. It ripens a little before or with Concord and comes on the market at a good time, especially for a red grape. When introduced Woodruff promised to be a valuable commercial grape but its poor quality, the fact that it does not keep well, and a pronounced tendency to crack and shatter, have kept the variety from becoming prominent for either vineyard or garden. While it is worthy of attention under some conditions because of hardiness and possibly other vine characters, yet it is hardly worth growing where other varieties of its color and season can be had.

Woodruff, or as it was first known, Woodruff Red, came from C. H. Woodruff of Ann Arbor, Michigan. He reported it as a chance seedling which came up in 1874 and fruited for the first time in 1877. It was supposed to be a cross of Catawba and Concord. It was introduced in 1885 and placed on the grape list of the American Pomological Society fruit catalog in 1889.

Vine very vigorous, hardy, produces as heavy or heavier crops than Concord, inclined to mildew in unfavorable locations. Canes intermediate in length, number and thickness, dark brown; nodes slightly enlarged, flattened; internodes medium to short; diaphragm medium to above in thickness; pith below average size; shoots pubescent; tendrils continuous, of mean length, bifid to trifid.

Leaf-buds small, short to medium, slender, pointed to conical. Leaves intermediate in size, of average thickness, somewhat roundish; upper surface light green, dull, rugose; lower surface greenish-white to bronze, pubescent; veins indistinct; leaf usually not lobed with terminus acute to obtuse; petiolar sinus intermediate in depth, medium to wide; basal sinus lacking; lateral sinus shallow and narrow when present; teeth very shallow and narrow. Flowers semi-fertile, open moderately early; stamens upright.

Fruit variable in season of ripening, usually shortly before Concord but sometimes slightly later, does not always keep well. Clusters variable in size, of fair length, broad, often widely tapering, usually single-shouldered or with largest clusters sometimes double-shouldered, compact; peduncle medium to long, variable in thickness; pedicel medium to short, thick, smooth, with scarcely any enlargement at point of attachment to fruit; brush long, pale green. Berries large to below medium, roundish to oval, dark red, dull, covered with thin lilac to faint blue bloom, sometimes drop badly from pedicel, firm. Skin thin, medium to tender, adheres strongly to the pulp, contains no pigment, slightly astringent. Flesh very pale green to nearly white, translucent, juicy, tough, coarse, very foxy, sweet at skin but quite tart at center, fair in quality. Seeds do not

WOODRUFF

separate easily from the pulp, one to five, average three or four, intermediate in size, medium to broad, short, rather plump, blunt, brownish; raphe obscure; chalaza small, slightly above center, oval, not distinct.

WORDEN.

(Labrusca.)

1. *Am. Hort. An.*, 1870:95. 2. *Wis. Hort. Soc. Rpt.*, 1873:71. 3. *Mich. Pom. Soc. Rpt.*, 1874:258. 4. *Am. Pom. Soc. Cat.*, 1881:24. 5. *Am. Pom. Soc. Rpt.*, 1881:42, 115, 121, 123, 136, 144, 168. 6. *W. N. Y. Hort. Soc. Rpt.*, 27:30, 97. 1882. 7. *Am. Pom. Soc. Rpt.*, 1885:103, 106. 8. *Wis. Hort. Soc. Rpt.*, 1885:176. 9. *Ohio Hort. Soc. Rpt.*, 1886-7:171. 10. *Ill. Hort. Soc. Rpt.*, 1887:91. 11. *Wis. Sta. An. Rpt.*, 5:162. 1888. 12. *N. Y. Sta. An. Rpt.*, 9:328. 1890. 13. *Miss. Sta. Bul.*, 22:12, 13. 1892. 14. *Bush. Cat.*, 1894:190. 15. *Col. Sta. Bul.*, 29:20. 1894. 16. *Tenn. Sta. Bul.*, Vol. 9:189. 1896. 17. *Gar. and For.*, 9:300. 1896. 18. *N. Y. Sta. An. Rpt.*, 17:537, 542, 543, 544, 545, 547, 553, 557. 1898. 19. *Ev. Nat. Fruits*, 1898:75. 20. *Ont. Fr. Exp. Stas. Rpt.*, 8:11, *fig.*, 49. 1901. 21. *Mich. Sta. Sp. Bul.*, 27:10. 1904.

WORDEN'S SEEDLING (1, 6). *Worden's Seedling* (12, 14).

Worden possesses most of the good qualities of Concord and lacks some of its bad ones. Of all the offspring of Concord, this variety is best known and is most meritorious. It is of the type into which nearly all of the black seedlings of Concord fall and surpasses all of these in quality though it does not equal the best of the green seedlings of the parent in fruit characters, especially in flavor. It differs chiefly from Concord in having larger berries and bunches, in having better quality and in being from a week to ten days earlier. It is equally hardy, healthy, vigorous and productive. It is more fastidious in its adaptations to soil and other conditions than its parents but now and then it is found to do even better under some conditions.

Worden is not as good a grape in many minor characters as the Concord and this is the chief reason why it is not grown as much as its distinguished parent. Its chief fault is that the fruit cracks badly, often preventing the profitable marketing of a crop. The Concord cracks also in unfavorable weather but the cracked berries often, or nearly always, partly or wholly recover from the injury through the growing over of the wounds. The Worden lacks the power of overcoming the cracking. Beside this tenderness of skin, the pulp of Worden is softer than that of Concord, there is more juice and the keeping qualities are not as good, so that the variety hardly ships as well as the more commonly grown grape. In some

seasons there is a decided tendency to shell or shatter if the fruit is overripe. Worden is very popular in New York and the North both for commercial plantations and the garden It is a more desirable inhabitant of the garden and for nearby markets, because of higher quality, than Concord, and under conditions well suited to it, is better as a commercial variety, as it is handsomer as well as of better quality. In the markets it ought to sell for a higher price than Concord if desired for immediate consumption and if it can be promptly harvested, as it does not hang well on the vines. In many markets Worden is sold as Concord and has the effect of extending the Concord season. Its earlier season is against it for a commercial variety in the great Chautauqua Grape Belt of New York and with the defects mentioned will prevent its taking the place of Concord to a great degree.

The Worden was originated by Schuyler Worden of Minetto, Oswego County, New York, from seed of Concord planted about 1863. It bore its first fruit when four years old. Its history is peculiar in that it was for many years unappreciated, being confused with Concord, which was frequently sent out as Worden. It was placed on the grape list of the American Pomological Society fruit catalog in 1881, where it still remains. The variety was given its name by J. A. Place of Oswego, New York, a local horticulturist of some note and a friend of Worden.

Vine vigorous, hardy, healthy, productive, yielding as heavy crops as Concord. Canes above medium in size and number, thick, dark brown with reddish tinge; nodes enlarged, flattened; internodes intermediate in length; diaphragm thick; pith of fair size; shoots pubescent; tendrils continuous, somewhat slender, bifid, sometimes trifid.

Leaf-buds small, short, slender, pointed, open in mid-season. Young leaves tinged on under side and along extreme margin of upper side with light rose-carmine. Leaves healthy, large, thick; upper surface dark green, glossy, smooth; lower surface light bronze, pubescent; leaf usually not lobed; petiolar sinus of average depth, medium to wide, often urn-shaped; teeth shallow, medium in width. Flowers fertile, open in mid-season or earlier; stamens upright.

Fruit ripens one or two weeks earlier than Concord, does not keep long. Clusters large, medium to long, broad, tapering to cylindrical, usually single-shouldered, somewhat compact; peduncle short, thick; pedicel of medium length, slender, covered with few small warts; brush long, light green. Berries large, roundish to oval, dark purplish-black to black, glossy, covered with heavy blue bloom, not always persistent, moderately

WORDEN

firm. Skin of average thickness, somewhat tender, cracks badly, adheres slightly to the pulp, contains considerable dark red pigment, astringent. Flesh greenish, translucent, juicy, fine-grained, tough, slightly foxy, sweet at skin to tart at center, mild, good to very good in quality. Seeds adherent, one to five, average three, large, broad, medium to short, blunt, brownish; raphe buried in a shallow groove; chalaza of average size, slightly above center, oval, somewhat obscure.

WYOMING.

(Labrusca.)

1. *N. Y. Ag. Soc. Rpt.*, **1868**:230. 2. Downing, **1869**:558. 3. *Am. Hort. An.*, **1871**:83. 4. *Horticulturist*, **29**:339. 5. *Bush. Cat.*, **1883**:145. 6. *Am. Pom. Soc. Rpt.*, **1885**:103. 7. *W. N. Y. Hort. Soc. Rpt.*, **30**:89. 1885. 8. *Am. Pom. Soc. Cat.*, **1889**:24. 9. *Am. Gard.*, **12**:48. 1891. 10. *Ill. Sta. Bul.*, **28**:202. 1893. 11. *Va. Sta. Bul.*, **94**:139. 1898. 12. *N. Y. Sta. An. Rpt.*, **17**:537, 548, 557. 1898. 13. *Mo. Sta. Bul.*, **46**:41, 42, 44, 46, 54. 1899. 14. *Mich. Sta. Bul.*, **169**:178. 1899. 15. *Kan. Sta. Bul.*, **110**:238. 1902.

Hopkins Early Red (2). Wilmington Red (3, 5). Wyoming Red (1, 2, 4, 6, 8, 9, 10, 11, 13, 14, 15). *Wyoming Red* (5).

Such value as Wyoming has lies in its hardiness, productiveness, healthiness and earliness. The general appearance of the fruit of the variety is very good; the bunches are well-formed and composed of rich amber-colored berries of medium size. But the quality is poor, being that of the wild Labrusca in foxiness of flavor and in the flesh characters. It is not nearly as valuable as some other of the red Labruscas hitherto described and can hardly be recommended for either the garden or the vineyard. It may be of value in breeding work and possibly for localities in which grapes are precariously hardy or in which more fastidious varieties cannot be grown. Wyoming is illustrated in *The Grapes of New York* chiefly because it is a typical red Labrusca though in times past it has been of commercial importance and hence has some historical interest.

Wyoming was introduced to public notice by Dr. S. J. Parker of Ithaca, New York, who states that it came from northern Pennsylvania in 1861. About 1870 it was fruited in central New York where it immediately attracted attention and was exhibited at various fairs and horticultural society meetings. It was named after the Wyoming Valley, beyond which place it could not be traced, and where it presumably originated. The variety was first known as Wyoming Red but later the Red was dropped.

Another variety under the name Wyoming preceded this. It was a black-fruited sort of apparently no value and seems now to be obsolete. The name Wilmington Red has been used to designate this variety, by what authority does not appear, as it was apparently first described under the name Wyoming Red. The Wyoming was placed on the grape list of the American Pomological Society fruit catalog in 1889 and removed in 1899. In spite of the fact that this variety has been discarded by the American Pomological Society, it is still offered for sale by many grape nurserymen.

Vine vigorous, hardy, healthy, productive to very productive. Canes medium to below in length, numerous, slender, dark reddish-brown, surface covered with a slight amount of blue bloom; nodes enlarged, frequently flattened; internodes short to medium; diaphragm medium to below in thickness; pith medium in size; shoots thinly pubescent; tendrils continuous, rather short, bifid.

Leaf-buds small, short, slender, pointed to conical, open late. Young leaves slightly tinged on under side only with faint rose-carmine. Leaves medium in size, of average thickness; upper surface light green, dull, smooth; lower surface dull green with tinge of bronze, slightly pubescent; lobes none to three with terminus acute to acuminate; petiolar sinus medium to shallow, wide to medium; basal sinus usually none; lateral sinus shallow and wide when present; teeth shallow, of average width. Flowers sterile, open in mid-season; stamens reflexed.

Fruit usually ripens from a week to ten days earlier than Concord, keeps and ships well for a grape of its species. Clusters medium to small, frequently below average length, medium to rather slender, slightly cylindrical to tapering, usually not shouldered but sometimes with a small single shoulder, compact to medium. Peduncle short to medium, slender; pedicel short, slender, covered with few small warts; brush slender, medium in length, pale green with brownish tinge. Berries above medium to small, roundish, dark dull red to rich amber red, covered with thin lilac bloom, persistent, firm. Skin medium in thickness, tender, adheres slightly to the pulp, contains no pigment, astringent. Flesh pale green, translucent, juicy, tough and solid, strongly foxy, vinous, sweet at skin to tart at center, poor in quality. Seeds do not separate easily from the pulp, one to three, average two and three, intermediate in size, breadth and length, slightly notched, usually rather blunt, light brown; raphe buried in a narrow, shallow groove; chalaza of average size, slightly above center, irregularly circular to oval, obscure.

WYOMING

CHAPTER VI

THE MINOR VARIETIES OF AMERICAN GRAPES.

Abby Clingotten. (Lab.) Noted by Prince in 1863 as a worthless Labrusca.

Ada. (Vin. Lab.) *Valk's Seedling.* (See page 56.) Originated in 1845 by Dr. Valk, of Flushing, Long Island, from Isabella fertilized by Black Hamburg. Vigorous, hardy; bunches very large, compact to loose; berries large; skin thin, almost black; vinous flavor. This is the first recorded hybrid between Labrusca and Vinifera.

Adelaide. (Vin. Lab.) A hybrid between Concord and Muscat Hamburg, by Ricketts; brought to notice in 1870. Bunch shouldered, loose; berries large, oval, black; sweet and sprightly.

Adelia. (Rip.?) *Petit Noir.* Noted in the *United States Patent Office Report*, 1859, as a small black native grape, raised in Orange County, New Jersey.

Adeline. (Lab.) One of T. B. Miner's seedlings of Concord. Vigorous; berry large, light green.

Admirable. (Linc. Aest.) From Munson; introduced in 1894. Vigorous; leaves large, smooth; stamens reflexed; bunch medium, shouldered, moderately compact; berry small, black; sweet and sprightly.

Adobe. (Long.) A wild variety of *Vitis longii;* found by Munson in Hutchinson County, Texas. Stamens reflexed; cluster small; berry small, black; ripens early.

Aiken. (Lab. Vin.?) Closely resembles Isabella and is the same variety or a seedling.

Albaiis. Noted by Warder in 1867 as follows: "Vine thrifty, hardy; bunch large; berry large, round, black; good."

Albania. (Linc. Aest. Lab. Bourq.) Parents, Post-oak, Norton, and Herbemont; from Munson. Very vigorous, prolific; cluster large to very large, shouldered; berry medium, translucent white; juicy, tender, sprightly; very late.

Albert. (Lab.) From Theophile Huber, of Illinois City, Illinois. Vigorous; leaf large, healthy; bunch small, compact; berry very large, round, red with bluish bloom; skin thin, tender; sweet, spicy, vinous; season about with Concord.

Albino. (Lab. Vin.?) *Garber's Albino; Garber's White.* From J. B. Garber, Columbia, Pennsylvania, previous to 1830, from the seed of York Madeira. Bunch medium; berry medium, oval, greenish-white; sweet.

Aledo. (Lab.) From B. F. Stinger, Charlottesville, Indiana, about 1887. Bunch medium, compact; berry medium to large, green, tinged with yellow, nearly round, oblate; ripens with Concord.

Aletha. (Lab. Vin.) Brought to notice about 1870, at Ottawa, Illinois; said to be a Catawba seedling. Bunch medium; berries purple, nearly black; flesh pulpy, foxy; early.

Alfarata. (Lab. Vin. Bourq.) A seedling of Brighton crossed with Delaware; from Henry B. Spencer, Rocky River, Ohio, about 1890. Berries small, dark red with a rich, vinous flavor.

Alice Lee. (Lab. Vin.) A seedling of Lady Washington; from W. H. Lightfoot, Springfield, Illinois. Vigorous, moderately productive; clusters medium, compact; berries large, golden yellow; very good; ripens with Concord.

Allair. Described by Downing in 1869. "Bunch small, loose; berry medium, reddish-brown; flesh pulpy, harsh, poor."

Alma. (Rip. Lab. Vin.?) A seedling of Bacchus fertilized with a doubtful hybrid seedling; from Ricketts. Vigorous, healthy; bunch medium, compact, seldom shouldered; berry medium, black, blue bloom; spicy, very sweet; season with or after Hartford.

Alphonse. (Lab. Rip. Vin.) From Theophile Huber, Illinois City, Illinois. Strong open grower; leaf subject to disease; a shy bearer; bunch medium, loose; berry large, oval, yellowish; later than Concord.

Aluwe. (Linc. Vin. Lab. Bourq.?) A seedling of Lucky pollinated by Carman; from Munson in 1899. Stamens reflexed; cluster large; berry medium, black; ripens late.

Alvey. (Aest. Vin.) *Hagar.* From Dr. Harvey, of Hagerstown, Maryland. Brought to notice about 1860; in 1867 listed by the American Pomological Society but dropped in 1883. Medium in vigor, uncertainly productive, mildews; stamens reflexed; bunches medium, loose, shouldered; berries small, round, black; juicy, sweet, vinous; very good; skin thin; ripens early.

Amalia. (Lab. Rip.) *Amelia.* A cross between Rommel's Faith and Ives; from F. E. L. Rautenberg, Lincoln, Illinois. Very hardy, healthy; leathery foliage; bunch above medium; berries medium, round, black; good quality; almost like Rogers' Aminia.

Amanda. (Lab.) From Missouri, about 1868. Strong grower, productive; bunches large, compact, shouldered; berries large, black, blue bloom, hard pulp, thick skinned; poor quality; may be the same as August Pioneer.

Ambecon. (Linc. Lab. Rup.) Parentage, America crossed with Beacon; from Munson in 1897. Stamens reflexed; cluster large; berry medium, black; ripens late.

Amber. (Rip. Lab.) *Rommel's Amber.* The same parentage as Elvira; from Jacob Rommel. Vigorous, hardy, moderately productive; bunches long, shouldered, somewhat loose; berry medium, oblong, pale amber; pulp tender, sweet, juicy; skin thin; season between Concord and Catawba.

Amberbonte. (Bourq. Linc. Rup.) A cross between America and Herbemont; from Munson. Vigorous and prolific; cluster very large; berry small to medium, dark red; skin thin, tough; flesh tender, juicy; fine quality; ripens with Herbemont.

American Hamburg. (Lab.) A large black grape pronounced a worthless Labrusca by Prince in 1863.

Amersion. (Linc. Lab. Rup.) Parentage, America pollinated by Profusion; from Munson in 1899. Stamens reflexed; cluster large; berry medium, black; ripens late.

Amonta. (Mont. Rup. Linc.) A seedling of *Vitis monticola* pollinated by America; from Munson in 1899. Cluster medium; berry medium, black; ripens late.

Amos. (Bourq. Lab. Vin.) A Delaware seedling grown in 1865 by W. W. Jones, Douglas County, Illinois. Vigorous, productive; berry medium; good keeper.

Amy. (Lab.) A seedling of Concord; from W. H. Lightfoot, Springfield, Illinois. Healthy, hardy; berries greenish-yellow; ripens with parent.

Andover. (Lab.) According to Mitzky, 1893, a black fox grape of no value.

Anida. Mentioned in the *Arkansas Experiment Station Report* for 1890 as "a variety, the foliage of which was but little affected by the grape leaf folder."

Anna. (Lab. Vin.) A seedling of Catawba; from Eli Hasbrouck, of Newburgh, New York, fruited in 1851 and later introduced by Dr. Grant of Iona. Resembles the Catawba in appearance of vine but is unhealthy and feeble; bunches medium, loose; berries medium, pale amber; meaty, vinous; ripens with Catawba.

Annie M. (Lab.) A chance seedling from L. C. Chisholm. Vigorous, unproductive; stamens upright; bunch medium, compact; berry medium, whitish-green; sweet; ripens with Diamond.

Anuta. (Linc. Rup. Lab.) Parentage, America crossed with Beacon; from Munson in 1899. Stamens reflexed; cluster large; berry large, black; ripens medium late.

Arbeka. (Linc. Lab. Rup.) Parentage, America crossed with Profusion; from Munson in 1899. Stamens erect; cluster large; berry medium, black; ripens late.

Archer. (Vin. Lab.?) A chance seedling which fruited about 1851 in the garden of Ellis S. Archer, Philadelphia, Pennsylvania. Foliage shows Vinifera; bunch above medium; berry medium, round, inclining to oval, greenish-white to amber; juicy, sweet; very good; ripens late.

Ariadne. (Vin. Rip. Lab.) A seedling of Clinton and a Vinifera; from Ricketts. Vine moderately vigorous; bunch small to medium, compact; berry small, round, black.

Arkansaw. (Lab.) *Wells Seedling.* From Joseph Hart, Fayetteville, Arkansas, in 1893. Vigorous, productive; bunch medium, moderately compact; berry medium to large, round, dull pink with minute red dots; sweet, very foxy; hardly fair in quality.

Armalaga. (Vin. Linc. Lab.) From Munson, about 1907, who gives it as a hybrid of Armlong and Malaga. Very vigorous, healthy; cluster large, compact; berry large, yellowish-green.

Armbrilong. (Linc. Lab. Vin. Bourq.) A seedling of Armlong crossed with Brilliant; from Munson in 1899. Stamens erect; cluster very large; berry medium, red; ripens late.

Armlong. (Linc. Vin. Lab.) A hybrid of Ten-Dollar-Prize crossed with Black Eagle; from Munson. On account of its large clusters, used largely by the originator in crossing.

Aroma. (Lab.) Noted in the *Hermann Grape Nurseries Catalog* for 1906 as a new red variety; bunches medium; berries very large; fine aroma.

Arrold. (Lab. Vin.) According to Husmann in 1870, "so much like Cassady that it will not pay to cultivate the two."

Atavite. (Lab.) A Concord seedling; from Munson, in 1885. Lacks vigor, unproductive; stamens erect; cluster small, irregular; berries small, black; good; very early; now discarded by Munson.

Atoka. (Linc. Rup. Bourq. Lab.) A cross-breed of America and Delaware; listed by Munson in 1899. Vigorous, healthy; clusters large, often with short shoulder, moderately compact; berries small to medium, globular, dark purplish-red; skin thin; juicy, sprightly; good.

Auburn Pearl. (Lab.) Noted by Dr. Parker of Ithaca, New York, as from a Mr. Cox of Auburn, New York. White; mild, sweet; early.

Aughwick. (Rip.) Found wild in the Aughwick Valley, Pennsylvania, by William A. Fraker of Shirleysburg. Resembles Clinton; berries larger and vine less productive.

August Coral. (Lab.) Noted by Prince in 1858 as from North Carolina. Hardy; berries bright red; early, sweet.

August Pioneer. (Lab.) Origin unknown; introduced about 1867. A coarse, large, black grape with firm, hard, pulpy flesh; early.

Augusta. (Lab.) A seedling of Concord; from T. B. Miner. Vigorous, hardy, unproductive; bunch medium; berries medium, white; fair quality; early.

Augusta. (Lab.) From a Mr. Broderick of St. Catherines, Ontario. Noted only as having been exhibited by Ontario at the World's Fair in 1893.

Augustina. (Bourq. Lab. Vin.) By Munson; from Delaware, Goethe and Brilliant. Introduced in 1901 under the name Augusta but changed to the above. Vigorous, very prolific; cluster large; berry very large, translucent, carmine; pulp meaty, tender, juicy.

Australis. (Long.) A wild variety of *Vitis longii* found by Munson on the Red River in Texas. Stamens reflexed; cluster small to medium; berry very small, black; ripens very early.

Auteonello. Mentioned in the *Ontario Fruit Growers' Association Report* for 1887 as a variety of medium vigor.

Avery Prolific. (Lab.?) Noted in the *American Horticultural Annual* for 1870 as a black grape received from John P. Avery, Norwich, Connecticut, and as very early, a great bearer, and of poor quality.

Avilla. (Aest.) Noted in the *Missouri Horticultural Society Report* for 1891 as a black grape of the same type and character as Cynthiana; a native of southern Kansas. Vigorous, productive, hardy, healthy; fruit black; sweet, sprightly, vinous.

Ayres Pride. (Lab. Vin.) From E. J. Ayres, Villa Ridge, Illinois, about 1890. Healthy; bunch large; berry large, black; quality best; resembles Norfolk.

Azure. (Aest.) Noted in the *United States Department of Agriculture Report* for 1893, as from J. S. Breece, Fayetteville, North Carolina. Cluster medium, cylindrical,

small shoulders, moderately compact; berry medium to below, roundish, adhering firmly, black; meaty, sweet with pleasant aroma; season with Catawba.

Badart. (Linc. Lab. Vin.) Parentage, Ten-Dollar-Prize crossed with Triumph; from Munson in 1899. Stamens reflexed; cluster large; berry large; ripens late.

Bailey Prolific. (Lab.?) A Mr. Weis, in the *Illinois Horticultural Society Report* for 1865, speaks of Bailey Prolific. Productive, hardy, healthy, superior in flavor to Hartford. May be the same as Avery Prolific.

Bailie. From Samuel Bailie, of Virginia, about 1830. Fruit of medium size, red, free from pulp.

Baker. (Lab. Vin.) Mentioned by Mitzky in 1893 as a seedling of Isabella which it resembles.

Baldwin Lenoir. (Bourq.) A supposed seedling of Lenoir from Westchester, Pennsylvania. Foliage and habit of growth like Lincoln; bunch small, loose; berries small, black, sugary; a wine grape.

Balziger. (Lab. Aest.) A cross between Norton and Martha; from J. Balziger, Highland, Illinois. Of agreeable taste, ripens very late.

Balziger's Concord Seedling No. 2. (Lab.) Resembles Concord; ripens later.

Balziger's No. 32. (Lab.) A fine-flavored white Concord seedling; must 84°.

Baltimore Seedling. Noted in the *United States Patent Office Report* for 1845 as from Sidney Weller, Brinkleyville, North Carolina.

Barbara. From Theophile Huber. Moderately vigorous; shy bearer; bunch small and irregular; berry medium, greenish-white; sweet, rich, tender pulp; ripens with Agawam.

Barnes. (Lab. Vin.) From Parker Barnes, Boston, Massachusetts, about 1864. Bunches shouldered; berries medium, oval, black; sweet; good; in season with Hartford.

Barnes. (Champ.) A wild vine of *Vitis champini;* found in Bell County, Texas, by Munson. Stamens reflexed; clusters small; berry medium, black; ripens mid-season.

Baroness. (Lab.) From Dr. H. Schroeder, Bloomington, Illinois. Resembles Moore Early in vine and fruit.

Bartlett. (Lab.) A pale red variety found in the woods at Lexington, Massachusetts, by Elias Phinney. Pronounced a worthless Labrusca by Prince in 1863.

Bates. (Lab.) Given in the *United States Department of Agriculture Report* for 1869 as a Labrusca.

Bauchman Red Fox. (Lab.) Prince states in 1830 that he received this vine from C. Bauchman of Pennsylvania. Fruit of large size, resembling the common red fox in flavor and color.

Baxter. (Aest.) A southern grape considered worthless by Prince in 1863. Clusters large; berries small, black; season very late.

Bay State. (Vin. Rip. Lab.) From N. B. White; parents, Marion crossed by

Black Hamburg. Vigorous, hardy; bunch medium, shouldered; berry slightly oblong, red; juicy, sweet, sprightly; season early.

Beach. (Linc. Lab. Vin.) Parentage, Post-oak No. 3 crossed with Triumph; from Munson in 1889. Stamens reflexed; clusters large; berry medium, black; ripens early.

Beagle. (Rip. Lab.) A seedling of Elvira crossed with Ives; from Munson, about 1888. Vigorous, moderately productive; bunch medium, sometimes shouldered; berry small to medium, oblong, black with heavy bloom; pulp firm, sweet; ripens about with Moore Early.

Beansville. Mentioned by William Saunders of the United States Department of Agriculture in 1864, as not being worthy of further attention.

Beaufort. (Rot.) Given in the *United States Department of Agriculture Report* for 1871 as a cultivated variety of Rotundifolia.

Beauty of Minnesota. (Lab. Bourq.) From J. C. Kramer of La Crescent, Minnesota, about 1866; supposed parents, Delaware and Concord. Vigorous, healthy; bunch large, compact, often shouldered; berry greenish-yellow; good; ripens early.

Beaverdam. (Lab.? Vin.?) Prince, in 1830, gives this variety as from Virginia, and states that vine and fruit resemble Bland.

Beeby Black. Described in the *Illinois Horticultural Society Report* for 1897 as more productive than Moore Early; bunch and berry not as large; ripens a little earlier; hardly as good.

Belinda. (Lab.) From T. B. Miner; a white seedling of Concord with large, juicy, sweet, slightly foxy fruit; ripens shortly after Lady.

Belton. (Champ. Vin. Lab. Bourq.) Parentage, De Grasset crossed with Brilliant; from Munson. Stamens erect; cluster medium; berry medium, black; ripens medium early.

Belvidere. (Lab.) Supposed to be a seedling of Concord or Hartford from Belvidere, Illinois; brought to notice by Dr. L. L. Lake in 1870. Resembles the Hartford in vine and fruit; early.

Belvin. (Linc. Rip. Lab.) From Munson. Very strong grower; large, loose, oblong bunches; berries medium, black with blue bloom; quality fair; ripens very late.

Ben. (Linc. Aest. Lab.) A seedling of Ten-Dollar-Prize crossed with Norton; from Munson in 1889. Stamens reflexed; cluster large; berry medium, black; ripens late.

Ben Hur. (Linc. Aest. Lab. Bourq.) A combination of Post-oak with Norton and Herbemont; from Munson. Exhibited at the American Pomological Society in 1903 and introduced about 1904. Vigorous, prolific, healthy; cluster large, rather loose; berry small, black; shells; good; ripens late.

Benjamin. (Lab.) From W. H. Lightfoot, Springfield, Illinois; offspring of Northern Muscadine. Vigorous; cluster large, loose to compact; berry large, black with blue bloom, pulpy; flavor similar to Woodruff; ripens with Concord.

Berks. (Lab. Vin.) *Lehigh.* A seedling of Catawba; from Berks County, Pennsylvania, about 1863. Vigorous, vine similar to parent; bunch large, shouldered, compact; berry large, red; of Catawba flavor.

Berlaussel. (Berland. Linc. Lab.) A seedling of *Vitis berlandieri* and Laussel; from Munson. Stamens reflexed; clusters large; berry medium, purple; ripens very late.

Berlin. (Lab.) A seedling of Concord; from Geo. Hosford, Ionia, Michigan. Vigorous, hardy, unproductive; bunch large, small-shouldered; berry medium to large, round, greenish-yellow; sweet, vinous, with slight foxiness; quality fair to good; ripens mid-season.

Bertha. (Lab.) From Theophile Huber, Illinois City, Illinois; about 1892. Vigorous; self-fertile; clusters medium to large, compact; berry medium, white with yellowish tinge; of fair quality; ripens with Worden.

Bertha. (Lab. Vin.) A seedling of Roenbeck; from Fred Roenbeck, Bayonne, New Jersey. Bunch and berries not as large as the parent; white; sweet; of fair quality.

Beta. (Lab. Rip.?) A cross between Carver and Concord; from L. Snelter, Carver, Minnesota. Very hardy, productive; fruit of fair quality; early.

Beta. A Labrusca-Vinifera hybrid given by the *Canada Experimental Farms Report*, 1896, as originating in London, Ontario. A table grape, neither large nor attractive.

Bettina. (Vin. Lab. Rip.) Parentage, Hartford crossed with Muscat Hamburg; from G. W. Campbell, Delaware, Ohio. In appearance and quality intermediate between the two parents.

Big Berry. (Linc.) *Big Bunch; Great Cluster?* A variety of the north Texas glaucous form of Lincecumii considerably used by Munson in his breeding work. It is characterized by great vigor of vine and large bunch and berry. One parent of Bailey, Collier, R. W. Munson, and many others.

Big Black. (Linc. Lab.) From Munson. Vigorous; bunches large, loose to compact, shouldered; berries very large, black, similar to Concord in appearance; poor in quality; ripens after Concord; good shipper.

Big Cluster. (Mont.) A variety of *Vitis monticola;* found by Munson in Bell County, Texas. Stamens reflexed; cluster large to medium; berry small, purple; ripens very late.

Big Hope. (Linc. Lab. Vin.) From Munson, about 1889; parents, Big Berry crossed with Triumph. Vigorous; clusters medium to large, variable in compactness; berries small to medium, purplish; fair in quality.

Big Ozark. (Lab.) In 1863, Prince noted this as a worthless Labrusca.

Bird's Egg. (Lab. Vin.) Downing, in 1869, described Bird's Egg as follows: "Bunch long, pointed; berry long, oval, whitish, with brown specks; flesh pulpy; only good as a curiosity." Resembles Catawba.

Bishop. (Lab. Vin.) A chance seedling from D. Bishop, Leavenworth, Kansas, about 1905. A supposed offspring of Brighton fertilized by Diamond. Fruit much like Diamond in color and size but less compact; ripens with Winchell.

Bismarck. (Lab. Vin.) A seedling of Brighton; produced by F. E. L. Rautenberg, of Lincoln, Illinois. Almost a reproduction of its parent except that it is hardier.

Bismarck. (Lab.?) A chance seedling from Fred Roenbeck, Bayonne, New Jersey. Healthy, vigorous, productive; bunch large; berries large, black, agreeable aroma.

Black Bear. Mentioned in *Texas Station Bulletin No. 48*, 1898, as "hardly desirable"; bunch oblong, loose; berries size of Lenoir, black with blue bloom; acid but rather pleasant; self-sterile; ripens mid-season.

Black Claret. (Lab.) Noted by W. R. Prince in 1863 as a worthless Labrusca.

Black Cluster. A very hardy, very productive, black, medium-sized native raised at an early day in the Northwest.

Black Delaware. (Lab. Bourq. Vin.) A seedling of Delaware raised by Rommel of Missouri over thirty years ago. Fruit resembles Delaware very closely except for the color which is black. Vine mildews in some neighborhoods.

Black Heart. (Vin. Rip. Lab.) Parentage, Marion crossed with Black Hamburg; originated by N. B. White of Norwood, Massachusetts; exhibited at the Massachusetts Horticultural Society in 1872. Berry medium; sweet and juicy.

Black Herbemont. (Bourq. Aest.? Lab.?) Either a Herbemont seedling or Herbemont crossed with Norton; from Munson, in 1893. Vigorous, productive, healthy; stamens upright; clusters large, loose; berry small, black; poor quality; ripens late.

Black King. (Rip. Lab.?) First noticed by Prince in 1863, who describes it as an early, small, good table and wine grape. Fuller received the variety from Bucks County, Pennsylvania, and in *Record of Horticulture* for 1868 he writes: "Said to be a fox grape; but the specimen vines we received from a very reliable source, have persisted in bearing Clinton grapes."

Black Madeira. (Vin. Rip. Lab.) *Madeira.* Parentage, Marion crossed with Black Hamburg; originated by N. B. White; exhibited before the Massachusetts Horticultural Society in 1873. Large, open bunch; berry very small; sprightly flavor; good.

Black Rose. (Lab. Vin.) Parentage, Concord crossed with Salem; raised by Rautenberg, of Lincoln, Illinois, in 1884. Vine resembles Concord, hardy, subject to mildew; bunch similar to Concord; berries large, black; of fine flavor.

Black September. (Rip.?) Given in the *United States Patent Office Report* for 1860 as a small, juicy, unproductive native grape under test by the Department of Agriculture.

Blackstone. (Lab.) An early black grape of poor quality, pronounced a worthless Labrusca by Prince in 1863.

Black Taylor. (Rip. Lab.) *Rommel's No. 19.* From Rommel, about 1882; similar to Montefiore.

Black Tennessee. (Aest.) According to *Gardener's Monthly*, 1859: Bunch large, long, shouldered, compact; berries medium, brownish-crimson with blue bloom; very juicy, sweet.

Black Virginia. (Rip.) A wild frost grape of Virginia; said to have been disseminated by Peter Raabe as the Emily.

Blackwood. (Lab. Vin. Bourq.) Parentage, Delago by Governor Ireland; from Munson, in 1897. Stamens erect; cluster large; berry large, black; ripens early.

Blanco. (Rip. Vin. Lab.) Seedling of Elvira crossed with Triumph; from Munson. Unproductive, self-sterile; cluster medium, cylindrical, loose; berry medium, oval, purple with blue bloom, moderately juicy, somewhat vinous, sweet; good; season about with Concord.

Bland. (Lab. Vin.) *Bland's Fox; Bland's Madeira; Bland's Pale Red; Bland's Virginia; Carolina Powel; Powell; Red Bland; Red Scuppernong; Rose Grape; Virginia Muscadell.* An old variety brought to notice by Colonel Bland of Virginia in the latter part of the eighteenth century. Moderately vigorous; leaves lobed, light green, smooth, delicate; cluster long, loose, often with imperfect berries; berries large, round; pedicels long; skin thick, light red to dark purple; flesh pulpy, sprightly, slightly foxy; ripens late. Many of the early authorities consider Bland a probable Vinifera hybrid on account of its resemblance to the European Chasselas.

Blondin. (Bourq. Aest. Linc. Lab.) A combination of Ten-Dollar-Prize, Post-oak, Norton and Herbemont; from Munson in 1899. Very vigorous, prolific; cluster large, compact, shouldered; berry medium, white, translucent; juicy, sprightly, acid; ripens with Catawba.

Blood. (Linc. Bourq.) A seedling of Lincecumii fertilized with Herbemont; from Munson. Moderate in vigor and productiveness; bunch small to medium, compact; berry small, black, juicy, with a sprightly subacid flavor, seedy; ripens a week later than Concord.

Blood Black. (Lab.) From a Mr. Blood, Newburyport, Massachusetts, about 1854. Hardy, vigorous, productive; bunch medium, compact; berry medium, round, black; sweet, with strong, foxy flavor; ripens early.

Blood White. (Lab.) From Blood, Newburyport, Massachusetts, about 1854. A red grape with the same general characters as Blood Black.

Blue Dyer. (Rip.) According to *Bushberg Catalogue*, 1883: Bunch medium; berries small, black.

Blue Favorite. (Aest.?) *Purple Favorite.* From Georgia, about 1825 or earlier. Very vigorous, resembling Cunningham but not so prolific; cluster large, conical; berries small, round, black; juicy, vinous; good; ripens with Herbemont.

Blue Imperial. (Lab.) Described by Downing in 1869 as follows: "Vigorous, healthy, unproductive; bunch medium, short; berry large, round, black, hard pulp; poor in quality; ripens with Hartford."

Boadicea. (Lab. Vin.) A cross of Telegraph with Black Hamburg; from Chas. J. Copley, Stapleton, New York. Of medium vigor; bunch medium, compact; berry oval; meaty, sweet with a rich, aromatic flavor; good keeper; ripens with Isabella.

Boadicea. (Lab.) A Concord seedling; from T. B. Miner of New Jersey. Vigorous, unproductive; bunch small; berry small, white.

Bokchito. (Line. Lab. Vin. Bourq.) A seedling of Early Purple crossed with Brilliant; from Munson in 1899. Stamens erect; cluster large; berry medium, black; ripens mid-season.

Bonne Madame. Listed with varieties which ripened earliest at the Experimental Farms, Canada, in 1905.

Bottsi. (Bourq.) From South Carolina. Very vigorous, productive; bunch very large, loose; berry below medium, light to dark pink, susceptible to black-rot. Very similar to Herbemont and names by some believed to be synonymous.

Boulevard. (Lab. Vin.) From A. Koeth, Charlotte, New York; Concord crossed with Brighton. Vigorous, productive; bunch large, compact, shouldered; berry medium, round, greenish-white; juicy, sweet, vinous; ripens with Concord.

Bowman. (Lab.) Described in *Magazine of Horticulture*, 1863, by Prince as a dark purple, early table grape of good quality.

Braddock. (Lab.) W. R. Prince, in *Magazine of Horticulture* for 1863, notes this as a purplish, early sweet table grape; hardy and adapted to New England.

Bradley. (Lab. Vin.?) Described by A. C. Hubbard of Troy, Michigan, in the *United States Patent Office Report* for 1849 as a grape of the Isabella type but three or four weeks earlier.

Braendly. (Lab.? Vin.?) From Illinois. Very weak, unproductive; stamens upright; bunch small, irregularly loose; berry small, yellow; of poor quality; ripens with Cynthiana.

Brand White. (Lab. Vin.) Resembles Cassady; exhibited before the Mississippi Valley Grape Growers' Association in 1867.

Breck. (Lab.) Exhibited before the Massachusetts Horticultural Society in 1855 by Thomas Waterman who gave it the above name. Resembles Winne. Hardy; early.

Bridgewater. (Lab.) Supposed to be a sport of Worden, received at this Station in 1901 from J. B. Tuckerman, Cassville, New York. Very similar to Worden but said by the originator to be a week or ten days earlier.

Brunk. (Linc. Vin. Lab.) A seedling of Lincecumii crossed with Triumph; from Texas. Medium in vigor and productiveness; stamens upright; bunch medium, irregularly loose; berry medium, black; poor quality; susceptible to black-rot.

Buist. (Lab. Vin.) Supposed to be a cross between Catawba and Brighton; from H. B. Buist, Greenville, South Carolina, about 1878. Vigorous, hardy, inclined to mildew; late in ripening.

Bumper. (Linc. Aest. Lab.) Post-oak crossed with Norton; from Texas. Very vigorous; stamens reflexed; bunch large, irregular, very loose; berry medium, black; of poor quality; susceptible to black-rot; season with Cynthiana.

Buncombe. (Lab.) A variety of *Vitis labrusca* found in North Carolina and used by Munson in his breeding work. Stamens reflexed; cluster small; berry large, black; ripens mid-season.

Bundy. (Lab.) A black seedling of Concord from the same lot of seeds as Colerain; from David Bundy, Colerain, Ohio. Vigorous, productive, hardy, healthy; bunch and berry resemble parent in appearance and quality; ripens with Moore Early.

Burlington. Given in *American Farmer*, 1822, as a New Jersey grape of high quality.

Burlington. (Lab.) A seedling from A. Taylor, Burlington, Vermont, about 1871. Reported hardy in northern New England and equal to Adirondac as a table grape.

Burnet. (Lab. Vin.) A seedling of Hartford crossed with Black Hamburg; from P. C. Dempsey, Albury, Prince Edward County, Ontario. Vigorous, productive, mildews; stamens reflexed; cluster large, shouldered, loose; berry large, oval, black; juicy; earlier than Concord.

Burroughs. (Rip. Lab.?) According to Downing, 1869, from Vermont. Vine like Clinton; bunch small; berry round, black with thick bloom; harsh, acid; ripens earlier than Isabella.

Burrows No. 42C. (Lab. Vin.) A seedling of Concord crossed with Jefferson; from J. G. Burrows, Fishkill, New York, received at this Station in 1888. Sometimes unproductive; bunch medium, very compact, handsome; berry medium or above, dark red with lilac bloom; juicy, sweet, tender, slightly vinous, fine flavor; ripens about with Concord.

Burton Early. (Lab.) Downing notes in 1869: A large, early grape; unworthy of culture.

Bush. (Bourq. Linc.) Parentage, Herbemont crossed with a Post-oak; from Munson. Stamens erect; cluster medium; berry medium, black; ripens very late.

Bushberg. (Aest. Lab.) A seedling of Willie crossed with an Aestivalis; from Dr. L. C. Chisholm, Tennessee. Aestivalis characters are predominant in both vine and fruit. Described by the originator as vigorous, healthy; clusters above medium, long, loose, shouldered; berries large, oblong, black, adherent; sprightly, vinous, tender; ripens about with Concord.

Cabot. (Lab. Vin.) *Stetson No. 1.* A seedling from A. W. Stetson, Braintree, Massachusetts, about 1853; a cross of a native Labrusca and Grizzly Frontignan. Bunch long, firm, short shoulder; berries medium, round, black with thick bloom; skin thick; musky, sweet.

Cairnano. Tested by the United States Department of Agriculture in 1864 and discarded as worthless.

California Rosea. Described by Warder in 1867 as: " Bunch large, compact; berry large, round, black, sweet."

California White. Noted by Warder in 1867. Bunch full, medium; berry large, yellow; very fine.

Calloway. (Bourq. Vin.?) Possibly a synonym of Ruckland. Vigorous, healthy, productive; cluster small to medium, compact; berries medium, oval, red; skin thin, tough; quality good; ripens very late.

Calypso. (Lab. Vin.) Produced by Chas. J. Copley, of Stapleton, New York, from seed of Lady crossed with Secretary; fruited in 1887. Hardy, strong in growth; bunches large, heavily shouldered; berries large, black; juicy, vinous; good; ripens with or after Concord.

Camaks. Found growing in the garden of James Camaks, about 1847. Bunch shouldered, long, loose, tapering; berries small, round, brownish-red; flesh tender, melting, sweet; good.

Cambridge. (Lab.) Originated in the garden of Francis Houghton, Cambridge, Massachusetts, about 1867. Vigorous; bunch large, shouldered, compact; berry large, black, covered with heavy bloom; similar to Concord; ripens four days earlier.

Camden. (Lab.) Bunch medium; berry large, greenish-white; flesh with hard center, acid; poor.

Canaan. Mentioned in the *United States Patent Office Report* in 1843, as one of the varieties grown at that time.

Canby. (Lab. Vin.) From W. Canby, Wilmington, Delaware; probably a seedling of Isabella, brought to notice about 1852. Hardy, vigorous; cluster medium size, compact; berry medium size, purple; flavor sweet; quality " best."

Canonicus. (Lab. Vin.) From D. S. Marvin, Watertown, New York, about 1888. Vigorous and productive; stamens upright; bunch loose, medium; berry medium, round, pale green, translucent, whitish bloom; skin thin; pulp sweet, tender, juicy, sprightly; ripens with Concord.

Cape May Prolific. *Large Blue English.* Mentioned by Prince in 1863 in a list of varieties in *Gardener's Monthly.*

Capital. (Lab.) Given in *Bushberg Catalogue* in 1894 as a white Concord seedling raised by W. H. Lightfoot of Illinois.

Carlotte. (Lab.) Produced by T. B. Miner of Linden, New Jersey, from seed of Concord. Vigorous, hardy; greenish-white; good.

Carminet. (Bourq.?) Bunches small, ragged; berries small, black; sweet; skin and pulp tender.

Carolina Blue Muscadine. *Jones' Perfumed.* Mentioned by Prince in *Gardener's Monthly*, 1863.

Caroline. *Carolina.* Said by Husmann in 1871 to be the same as Concord.

Carter. (Lab. Vin.?) An old variety mentioned as early as 1831; a seedling of Isabella. Bunch large, shouldered; berries large, round, black, heavy bloom; good, very similar to Isabella with which it ripens.

Carter. (Lab.) *Mammoth Globe.* A large-fruited red Labrusca used by Rogers.

Carver. Given as one of the parents of Beta. Not described.

Case. (Rip.) Mentioned by the United States Department of Agriculture in 1869.

Case Crystal. (Lab.) Noted in the *United States Patent Office Report* for 1859 as a reliable variety for New England.

Caspar. (Bourq.) A seedling of Louisiana; from A. Caspar of New Orleans, supposed to be a cross with Herbemont. Vigorous; cluster medium, compact; berries brownish-red, small; juice white; good; ripens late.

Cassady. (Lab. Vin.) *Arcott; Arnott; Arrott.* A chance seedling from H. P. Cassady, Philadelphia, Pennsylvania; fruited in 1852. Medium in vigor, productive; stamens upright; cluster medium, compact, sometimes shouldered; berry medium, round, greenish-white, covered with white bloom; skin thick, tough; flesh juicy, tender, pleasant; very good; ripens with Catawba.

Catarobe. Mentioned in the *Horticulturist* of 1850 as growing well in Illinois.

Catherine. (Lab. Vin.) From Gen. N. M. Waterman of Hartford, Connecticut, 1854. Clusters small, compact, firm; berries medium, slightly oval, green, translucent; skin thin; pulp soft, sweet, well flavored, foxy.

Catoosa. (Linc. Vin. Lab. Bourq.?) Parentage, Lucky crossed with Carman; from Munson in 1899. Stamens erect; cluster large; berry medium, black; ripens late.

Caywood No. 1. (Lab. Vin. Bourq.) From A. J. Caywood, Marlboro, New York; a red seedling of Poughkeepsie fertilized with Iona.

Caywood No. 50. (Lab. Vin.) From A. J. Caywood, about 1888. Vigorous, healthy, productive; stamens upright; cluster medium, compact, often shouldered; berry large, roundish, black with abundant bloom; shatters; skin thick, tender; pulp juicy, sweet, tough, vinous; good; ripens a little before Worden.

Chambersburg White. Mentioned in *Gardener's Monthly* in 1863 in a list of worthless varieties.

Chambril. (Champ. Lab. Vin. Bourq.) Parentage, *Vitis champini* crossed with Brilliant; from Munson. Stamens upright; cluster medium or above; berry small, purplish-black, thin bloom; skin thin, tough; pulp tender, not juicy, vinous; good.

Champanel. (Champ. Lab.) Parents, *Vitis champini* crossed with Worden; from Munson. Vigorous; clusters large, conical; berries globular, large, black; season with Concord.

Champovo. (Champ. Vin. Lab. Bourq.) Parentage, De Grasset crossed with Brilliant; from Munson. Stamens reflexed; cluster medium; berry large, black; ripens mid-season.

Chandler. (Lab.) A chance seedling from N. M. Chandler, Ottawa, Kansas, about 1886; probably from Worden. Vigorous, productive; stamens upright; cluster medium, shouldered, compact; berry above medium, round, rich yellow; good.

Chapin. Noted in *Gardener's Monthly*, 1863, as worthless.

Charles. (Rip. Lab.?) Mentioned by Joseph Hobbins about 1869 as having been injured by winter; exhibited at Wisconsin State Fair that year. Resembles Clinton.

Charles A. Green. A white grape originated by F. W. Loudon, Janesville, Wisconsin; introduced by the Chas. A. Green Nursery Company of Rochester, New York. Said to be "a vigorous grower, and an enormous yielder of very large and beautiful clusters of excellent fruit."

Charlotte. (Lab. Vin.) From Edmund Ward, Kelleys Island, Ohio; a seedling of Catawba. Bunch medium, not shouldered; berries medium, roundish, pale red; flesh tender, sweet, vinous; skin thick; season with Delaware.

Charlton. (Vin. Lab.) A cross between Brighton and Mills; from John Charlton, Rochester, New York; fruited about 1893. Vigorous, productive, hardy; clusters large, generally well shouldered, compact; berry large to medium, roundish-oval, dark red; skin rather thin, tough; pulp meaty, tender, releases seeds easily; juicy, sweet, rich, vinous; ripens a week before Concord; keeps well; promising.

Charter Oak. (Lab. Aest.) A large coarse, foxy grape from Connecticut. Vigorous, hardy; canes long with blue bloom; tendrils continuous; clusters small, loose; berries large, roundish, dull dark amber; shatter; flesh soft, tough, foxy; fair quality; ripens with Concord.

Chavoush. Exhibited before the Massachusetts Horticultural Society in 1868. Productive; bunch large; berry large, oval, white; keeps well.

Cheowa. Noted in the *United States Department of Agriculture Report* for 1863 as a variety to be discarded.

Cherokee. (Aest. Lab.) From Stayman, of Kansas; the same parentage as Ozark. Vigorous; free from rot and mildew; bunch large, compact; berry medium, black; tender, juicy, sweet; season with Cynthiana.

Chicago. (Lab.) A chance seedling found in Lincoln, Illinois, by F. E. L. Rautenberg. Vigorous, productive, hardy; bunch medium, sometimes double; berries medium, round; skin tough; color red resembling Delaware; sweet, rich; ripens early; ships well.

Chidester's Seedlings. Produced by C. P. Chidester, Battle Creek, Michigan, about thirty years ago. All are apparently second generation Vinifera-native hybrids. They

are of high quality but all seem to have some weakness which makes their permanent popularity doubtful. These varieties appear to have become confused, as the Michigan Experiment Station Bulletins, our chief source of information, have published contradictory descriptions in different places.

No. 1. See Lyon.

No. 2. (Lab. Vin.) Moderately vigorous, hardy; stamens reflexed; cluster medium, compact; berry medium, round, dark red; flesh soft, sweet, vinous; good; ripens early; shatters somewhat.

No. 3. Vigorous; cluster large, loose, shouldered; berry large, dark purple; flesh firm, juicy, sweet; keeps well.

No. 4. Vigorous; cluster medium, roundish, shouldered, loose; berries large, round, nearly black; flesh tender, vinous; good; ripens just after Concord.

Chillicothe. (Lab. Vin.) From Ohio. Mentioned in the *United States Department of Agriculture Report* in 1863. Bunch long, loose; berry medium, oval, dark purple.

Chippewa. Found growing on the banks of Chippewa Creek, Ontario; described in 1858 by W. H. Read. Bunch large, compact, heavily shouldered; berry medium, black; flesh tender, sweet, good.

Chisholm's Seedlings. Produced by Dr. L. C. Chisholm, Spring Hill, Tennessee. Of his named sorts there are: Annie M., Bushberg, Delawba, Gilt Edge, La Marie, Lutie, and Willie, the best known being Lutie. The following unnamed seedlings from Chisholm have been tested and described:

No. 1. (Bourq. Lab. Vin.) A Delaware seedling. Weak, healthy; stamens reflexed; cluster small, very loose; berry medium, purple; quality poor; ripens with Worden.

No. 3. (Bourq. Lab. Vin.) A seedling of Delaware. Medium in vigor, healthy; stamens upright; cluster small, compact; berry small, reddish-purple; quality fair; ripens with Worden.

No. 4. (Bourq. Lab. Vin.) A seedling of Delaware. Vigorous; cluster medium size; berries light green, sprightly, vinous; good; ripens with Delaware.

No. 5. (Bourq. Lab. Vin.) A Delaware seedling. Moderately vigorous; berry light red; good quality; ripens just before Concord.

No. 6. (Bourq. Lab. Vin.) A seedling of Delaware. Weak, apparently healthy, a shy bearer; stamens reflexed; cluster small, loose; berry medium, purple; fair quality; ripens with Worden; not a good keeper.

No. 8. (Bourq. Lab. Vin.) A Delaware seedling. Vigorous, hardy, productive; cluster medium; berry medium, black; very good; ripens with Moore Early.

No. 9. (Aest.) Moderately vigorous, attacked somewhat by black-rot, hardy; stamens upright; cluster medium; berry medium, red; quality hardly fair; ripens with Concord.

Chocolate. Mentioned in a list of worthless varieties in *Gardener's Monthly* in 1863.

Choteau. (Linc. Vin. Lab. Bourq.?) Parentage, Lucky crossed with Carman; from Munson in 1899. Stamens erect; cluster large; berry medium, black; ripens late.

Church Seedling. (Lab.) From Dr. Durfee, Fall River, Massachusetts; a seedling of a wild grape unworthy of cultivation.

Claret. (Rip.) From Charles Carpenter, Kelleys Island, Ohio. Vigorous; bunch and berry medium; claret red; acid; resembles Clinton.

Clarissa. (Lab. Vin.) A white seedling of Salem; from F. E. L. Rautenberg, Lincoln, Illinois.

Clark. (Lab. Vin.) From J. S. Phelps, Washington, District of Columbia. Cluster of medium length, sometimes shouldered, compact; berry medium, oval, dull red, heavy bloom; sweet, foxy.

Clark Seedling. (Lab.) From a Mr. Clark of Framingham, Massachusetts; described in *Magazine of Horticulture* in 1861. Hardy and early; bunch loose; berry reddish; quality excellent.

Clarkes. Mentioned by Prince in 1830 as being grown in Virginia. Bunch and berry large; early; keeps well.

Claude. (Lab.) From Georgia. Vigorous; stamens upright; bunch medium, loose; berry large, black; poor quality; ripens a little before Norton.

Cleopatra. (Lab. Rip.) Parentage, Ives crossed with Faith; from F. E. L. Rautenberg, Lincoln, Illinois. Vigorous, hardy, productive; bunch and berry medium; black; early.

Clifton. (Lab. Vin.) Parents, Telegraph crossed with White Frontignan; from C. J. Copley, Stapleton, New York. Vigorous, productive; bunch large, compact; berries white, large; ripens in September.

Climax. (Lab. Vin.) A seedling from A. Reisinger of Naples, New York, about 1883; supposed to be a seedling of Catawba. Vigorous; berry medium to large, red; tender, sweet, sprightly; ripens with Concord.

Clinton-Vialia. (Rip.) Probably identical with Franklin. Used in France as a grafting stock.

Cloantha. (Vin. Lab.) An Isabella seedling from Kentucky. Vigorous; berry black, small; foxy.

Clover Street Black. (Lab. Vin.) A seedling of Diana crossed with Black Hamburg; from Jacob Moore. Bunches large, compact; berries large, round, black; flesh tender, sweet, ripens with Concord.

Clover Street Red. (Lab. Vin.) A seedling of Diana crossed with Black Hamburg; from Jacob Moore. Vigorous; berries large, roundish-oval, crimson; Diana flavor and season.

Cluster. Mentioned in the *United States Patent Office Report*, 1852, as a native grape.

Clyde. (Lab.? Vin.?) From John Burr, Leavenworth, Kansas. Bunch medium, compact; berry large, red; tender, juicy, sweet.

Cochee. (Lab. Bourq.) From John Burr, Leavenworth, Kansas, 1887. Vigorous; tendrils intermittent; cluster medium to small, compact; berry medium, dark red, lilac bloom; flesh tender, fine, vinous, sweet; good; ripens about with Concord.

Coe. (Lab.) From Iowa. Hardy, vigorous; cluster small, compact, rarely shouldered; berries small to medium, black; a week earlier than Concord.

Colesvine. (Lab.? Vin.?) Enumerated in a list of unpromising grapes for North Carolina by Sidney Weller in 1845.

Collier. (Linc. Lab.) *Big Red; Dr. Collier.* A seedling of Post-oak by Concord; from Munson. Vigorous, productive; tendrils intermittent; stamens upright; cluster medium to large, variable in compactness; berries large, roundish, dark reddish-purple, heavy bloom; flesh tender, fine-grained, vinous, nearly sweet; quality good; ripens just after Concord.

Collina. *Hill Grape of Ohio.* Listed by Prince in *Gardeners' Monthly* in 1863.

Colorado. From John Gravestock, Canon City, Colorado. Vigorous; cluster medium, long, shouldered, compact; berries medium; sweet, tender; late.

Colp. (Lab.) A wild vine of *Vitis labrusca* found in Maryland and used by Munson. Stamens depressed; cluster medium; berry large, white; ripens mid-season.

Columbia. (Rip.) Said to have been found by Major Adlum on his farm at Georgetown, District of Columbia., previous to 1830. Vigorous, productive; cluster small, loose; berries round, black, small; quality poor.

Columbia. (Lab.) From J. T. C. Clark, Washington, before 1883. Vigorous; cluster and berry medium, white; good; late.

Columbian. Originated about the same time as Columbian Imperial and probably identical with it. The literature of the two is so confused, Columbian Imperial having been sold as Columbian, that it is impossible to determine whether they are distinct.

Columbus. (Bourq. Aest. Rip.) From John Hertlein, Spielerville, Arkansas; parents, Delaware and Norton. Vigorous; bunches large, nearly compact; berries medium, black; sweet, pleasant flavor; ripens with Delaware.

Compacta. (Bourq. Vin. Lab.) A seedling of Herbemont crossed with Triumph; from Munson. Stamens erect; cluster large; berry small, white; ripens very late. Now discarded by originator.

Concord Chasselas. (Vin. Lab.) From G. W. Campbell, Delaware, Ohio, 1881; a cross between Golden Chasselas and Concord. Vigorous; cluster long, moderately compact, sometimes shouldered; berries large, oval, greenish-white; pure flavor; good; ripens with Concord.

Concord Muscat. (Vin. Lab.) A seedling of Concord crossed with Muscat; from G. W. Campbell. Vigorous; cluster compact, long, sometimes shouldered; berries large,

oval, light greenish-white; flesh tender and melting; quality very good; ripens with Concord.

Concordia. (Lab. Bourq.) From Dr. J. Stayman, Leavenworth, Kansas. Vigorous, hardy; bunch large, compact; berry large, black; pulp tender, juicy, sweet, vinous; very good; ripens about with Concord.

Conelva. (Lab. Rip.) A seedling of Concord crossed with Elvira; from Munson. Vigorous, hardy; stamens upright; cluster medium, compact; berry medium, round, black; quality fair; ripens with Cottage.

Connecticut. Mentioned by Prince in a list of worthless varieties in *Gardener's Monthly* for 1863.

Connecticut Seedling. Cited in the *Illinois Horticultural Society Report* for 1868 as a promising table grape.

Conqueror. (Vin. Lab.) From Rev. Archer Moore, New Jersey, about 1868; supposed by him to be a cross between Concord and Royal Muscadine. Vigorous; stamens upright; bunch medium, loose; berries medium, oval, black, pulpy; quality fair; ripens about with Concord.

Cooper Wine. From Joseph Cooper, Gloucester County, New Jersey, about 1800. Vigorous; berry round, medium, purple; quality fair.

Copley's Hybrids. Chas. J. Copley of Stapleton, Staten Island, New York, about thirty years ago originated and exhibited a large number of hybrid grapes. His productions were chiefly the result of fertilizing cultivated American varieties with pollen of standard Viniferas, particularly the White Frontignan. His seedlings which received names are Boadicea, Calypso, Clifton, Cornelia, Daphne, D'Elboux, Lulie, Mineola, Paragon, and Zelia. They show too many Vinifera weaknesses, particularly a tendency to mildew, to become popular. None of them was ever introduced.

Coppermine. Discarded as worthless from test vineyards of the Department of Agriculture in 1864.

Corby. (Lab. Vin.) From C. C. Corby, Montclair, New Jersey. Vigorous, hardy, productive; blooms mid-season; stamens upright; clusters above medium, variable in compactness; berries intermediate in size, oval to roundish, dull black with heavy blue bloom; flesh fine-grained, sweet, resembles Concord in flavor; good; ripens about with Concord.

Coriel. (Lab. Vin.) From New Jersey. Hardy; bunch medium; berry small, oval, black; good.

Cornelia. (Vin. Lab.) A seedling of Telegraph crossed with White Frontignan; from Chas. J. Copley, Stapleton, New York. Bunch large, shouldered; berries round, white with amber tint; juicy, rich, sweet.

Cornucopia. (Vin. Rip.) *Arnold's No. 2.* Parents, Clinton crossed with Black St. Peters; from Charles Arnold, Paris, Ontario, 1859. Vigorous; stamens upright;

cluster large, shouldered, compact; berry medium to large, black; flesh tender, vinous, juicy; good; ripens with Concord.

Corporal. (Lab. Aest. Vin.) Parents, Eumelan crossed with Worden; from D. S. Marvin, about 1881. Bunch and berry medium, loose; black; vinous; good.

Corsican. From Ohio. Hardy; bunch large; berry small, round, red; very good.

Cortland. (Lab.) *Courtland.* A seedling of Concord crossed with Hartford; from M. F. Cleary, Cortland, New York, about 1863. Believed by some to be identical with Champion. Vigorous; clusters large, compact; berry large, black; sweet; early.

Cotoctin. Described by Fuller in 1867 as a chance seedling from Pennsylvania. Bunch large, shouldered; berries large, white; good; late.

Covert. (Lab.) A chance seedling; from N. B. Covert, Ann Arbor, Michigan. Bunch large, compact; berries large, greenish-white; sweet; ripens with Concord.

Cowan. (Rip.) *McCowan; McGowan; McOwen.* An old variety of unknown origin; once raised on Lake Champlain. Very hardy; clusters medium; berries small, black, heavy bloom; juicy, sour; very early.

Cozy. (Lab. Vin.) From J. S. Breece, Fayetteville, North Carolina. Cluster large, compact; berry oval, medium, black, blue bloom; flesh translucent, tender; good; ripens a week before Ives.

Craig. (Rip.?) *French Grape.* A variety found growing at Franklin, Pennsylvania, about 1809; perhaps synonymous with Franklin. Fruit dark-colored; bunch and berry medium; juicy; good.

Critic. (Lab. Vin.?) A seedling of Jefferson; from J. S. Breece, Fayetteville, North Carolina; described in 1892. Cluster large, shouldered, compact; berries round, medium, dull red; foxy; good; earlier than Brighton.

Crown. (Linc. Vin. Lab.) From Munson; parents, Post-oak crossed with Triumph. Vigorous; stamens upright; cluster large, compact; berry large, black; good; ripens with Catawba.

Crystal. (Lab.) A native grape found by S. D. Case, Canton Center, Connecticut. Vigorous; cluster medium; berries large, oblate, green with white dots; sweet, juicy.

Culbert Seedling. (Lab. Vin.) From Dr. W. A. M. Culbert, Newburgh, New York. Parents, Iona crossed with Muscat Hamburg. Bunch and berry large; purplish-black; good.

Curtis. *Stetson's Seedling No. 4.* From Nahum Stetson, Bridgewater, Massachusetts; mentioned in the *Magazine of Horticulture* in 1857 as being a seedling of "superior flavor".

Curtis. (Linc. Vin. Lab.) Parentage, Post-oak No. 3 crossed with Triumph; from Munson in 1889. Stamens erect; cluster large; berry medium, black; ripens mid-season.

Cuyahoga. (Lab. Vin.?) *Coleman's White; Wemple; Wemple's Seedling.* Found by a Mr. Wemple at Euclid, Ohio, previous to 1859, and named after the county in which it was found. Vigorous; cluster large, shouldered, compact; berries large, round,

covered with bloom, pale yellowish-green tinged with amber; pulp melting, juicy, sweet, fine musky flavor; ripens about with Catawba.

Cuyarano. (Lab.) Given in a list of native fox grapes in the report of the Department of Agriculture in 1869.

Cyncon. (Lab. Aest.) A seedling of Cynthiana crossed with Concord; from Munson. Vigorous, healthy, dark green foliage; bunch long; berry black; late.

Dana. (Lab.) A seedling from Francis Dana, Roxbury, Massachusetts, about 1860. Vigorous, hardy, mildews slightly; bunch medium, shouldered, compact; berries large, nearly round, red with heavy bloom; free from pulp as Delaware, not as sweet; ripens about with Concord.

Danbury. (Lab.) A chance seedling from H. C. Coble, Danbury, Connecticut. Hardy, healthy; bunches medium, compact, sometimes shouldered; berries large, black; flesh tender, mild, sweet; good; ripens earlier than Hartford.

Daphne. (Lab. Vin.) A seedling of Telegraph crossed with White Frontignan; from Chas. J. Copley, Stapleton, New York, about 1875. Very vigorous, hardy, healthy, productive; bunch medium to large with very long stem; berry medium to large, white; without pulp, sweet, rich, Muscat flavor; ripens early.

Dartmouth. (Lab.) Listed by Prince in *Gardener's Monthly* for 1863 as a worthless variety.

Darwin. (Aest. Bourq. Lab. Vin.) A seedling of Delaware crossed with some vigorous Aestivalis; from Dr. J. Stayman. Vigorous, hardy, healthy, productive; foliage of Aestivalis type; bunch large, compact, double-shouldered; berry medium, red; tender, juicy, vinous; ripens with Delaware.

Davis. (Long.) A variety of *Vitis longii* found by Munson in Hutchinson County, Texas. Stamens reflexed; cluster small; berry small, black; ripens early.

Davkina. (Linc. Rup. Lab.) A cross of America and Beacon; from Munson in 1899. Stamens erect; cluster large; berry large, black; ripens mid-season.

De Grasset. A variety of Champini, noted by Munson in *Texas Station Bulletin No. 56* as the female parent for a few of his crosses.

Delago. (Bourq. Lab. Vin.) A seedling of Delaware cross-pollinated by Goethe; from Munson in 1883; introduced in 1896. Medium in growth and productiveness, not hardy, susceptible to mildew; stamens reflexed; clusters below medium to small, often oval, variable in compactness; berries medium to above, roundish to oval, dark red, lilac bloom, very persistent; meaty, vinous, sweet; very good; ripens late.

Delaware Seedling. (Bourq. Vin. Lab.) J. A. Warder in 1867 describes a "Delaware Seedling" from Ohio. Healthy; bunch short; berry medium, dull red; rich, sweet, somewhat foxy; very early.

Delaware Seedling. (Vin. Bourq. Lab.) *Delaware Seedling No. 4.* A seedling of Delaware crossed with Gen. Marmora; from Dr. W. A. M. Culbert, Newburgh, New York. More vigorous grower than Delaware, hardy, prolific.

Delaware Seedling No. 2. (Bourq. Lab. Vin.) From Jacob Rommel. Vigorous, healthy, productive; bunch above medium, compact, shouldered; berry medium, black; pulpy, sweet; very good; ripens earlier than Hartford.

Delaware Seedling No. 9. (Bourq. Lab. Vin.) From Jacob Rommel. Moderate grower, healthy, hardy, very productive; bunch medium, compact; berry medium, black, firm, sweet; ripens before Concord; good keeper and shipper.

Delaware Seedling No. 16. (Bourq. Lab. Vin.) From Jacob Rommel. Moderate grower, very productive, healthy; bunch medium; berry medium, white with white bloom; very sweet, pure flavor, pulpless; ripens with Concord; fine keeper and shipper.

D'Elboux. (Vin. Lab.) *D'Elboux Seedling.* A seedling of Telegraph crossed with Black Hamburg; from C. J. Copley, Stapleton, New York, in 1876. Very vigorous, productive, hardy, healthy; foliage like Labrusca except smooth underneath; bunch very large, sometimes slightly shouldered, compact, handsome; berries very large, black with blue bloom, oval, persistent; juicy, sweet, rich, vinous; skin thick; ripens with Hartford.

Delgoethe. (Lab. Vin. Bourq.) A seedling of Delaware crossed with Goethe; from Munson; possibly same as Delago. Noted by Mitzky in 1893 as still under test.

Delicious. (Linc. Bourq.) Big Berry crossed with Herbemont; from Munson in 1887, introduced about 1894. Vigorous, productive, healthy; stamens upright; bunch medium, moderately compact; berry medium, round, black with blue bloom; sprightly, sweet; skin thin, tough; ripens a little after Concord.

Delmar. (Lab. Vin. Bourq.) Mentioned by Mitzky in 1893 as a seedling of Delaware crossed with Martha; from Munson.

Delmerlie. (Lab. Vin. Bourq.) A seedling of Delago crossed with Governor Ireland; from Munson, in 1898. Stamens erect; cluster large; berry large, black; ripens mid-season.

Dempsey's Seedlings. P. C. Dempsey, Albury, Prince Edward County, Ontario, a noted Canadian hybridist of various cultivated plants, has produced several hybrid grapes which are mentioned in grape literature as follows:

No. 4. (Lab. Vin.) Medium in vigor.

No. 5. (Lab. Vin.) Resembles Massasoit in some respects but earlier.

No. 18. (Lab. Vin.) Failure.

No. 25. (Lab. Vin.) Failure.

No. 60. (Lab. Vin.) Hardy; white, vinous, very good.

Apparently none of these were ever introduced. Besides these he originated Burnet. (See p. 443.) Dempsey's work with grapes was done about thirty years ago.

Denison. (Lab.) A seedling of Moore Early; from Munson. Medium in vigor, unproductive, usually healthy; bunch medium in size and compactness; berry large, round, black with blue bloom, of Concord flavor.

Dennis Seedling. (Lab.) Found growing wild on the bank of a river by John Dennis, Hillsborough, New Hampshire. Compact grower, hardy, productive; fruit large, amber-colored, of fine flavor.

Denniston. (Lab.) A native grape found on an island in the Hudson River below Albany, by Isaac Denniston about 1823. Very vigorous, hardy; berry large, yellowish-red; slight musky flavor.

De Soto. (Rot. Muns.) A seedling of Scuppernong pollinated by *Vitis munsoniana;* from Munson in 1896. Stamens reflexed; cluster small; berry medium, black; ripens very late.

Detroit. (Lab. Vin.) Supposed to be a Catawba seedling; found in the garden of T. R. Chase, Detroit, Michigan, about 1860. Vigorous, hardy, with foliage like Catawba; bunch large, very compact; berry medium, round, darker than Catawba; rich, sweet, sprightly Catawba flavor; earlier than its parent.

Diller. (Lab.) According to Strong, 1866, pulpy and inferior to Isabella which it resembles.

Dingwall White. (Lab.) Vigorous, healthy; bunch short, compact; berry large, round, white; quality poor; late.

Dinkel. (Lab. Vin.) A Catawba seedling; from Munson. Vine and leaf much like parent; bunch medium to large, compact, slightly shouldered; berry medium, round, deep coppery red with thick bloom; much like Catawba in flavor; ripens with parent.

Dixie. (Rot. Linc. Lab. Vin. Bourq.) Parents, San Jacinto crossed with Brilliant, from Munson in 1899. Stamens reflexed; cluster small; berry large, amber-colored; ripens late.

Dr. Bain. (Lab.) A white seedling of Concord; from Illinois.

Dr. Kemp. (Linc. Bourq.) A seedling of Post-oak crossed with Herbemont; from Munson; introduced in 1896. Vigorous and productive, subject to downy mildew; stamens upright; bunch medium, loose, shouldered; berry small, purple; poor quality; ripens a week after Concord.

Dr. Robinson Seedling. (Lab.?) Described by Wisconsin Experiment Station in 1888. Productive; bunch medium, compact; berry medium, round, black, purple bloom; poor quality; ripens with Concord.

Dr. Warder. (Lab.) Of unknown parentage; from Theophile Huber, Illinois City, Illinois. Vigorous, hardy, healthy; cluster medium to large, compact, often heavily shouldered; berries large, round, black, heavy bloom; pulp tough, juicy, sprightly, sweet; good; said to ripen before Hartford which it closely resembles.

Doder. *Washington.* Noted in the *American Pomological Society Report* for 1877 as a seedling from a Mr. Doder, Washington County, Iowa.

Dog Ridge. (Champ.) A variety of *Vitis champini* found by Munson in Bell County, Texas. Stamens depressed; cluster small; berry medium, black; ripens mid-season.

Dolle. According to W. F. Bassett in *Rural New Yorker* for 1885, supposed to have come from Germany but it has none of the characters of Vinifera. Vigorous; clusters sometimes loose; berry larger than Moore Early; of good quality, persistent; ripens early.

Dorinda. (Lab.) Said to be a seedling of Rebecca; from Hudson, New York, about 1858. Bunch medium; berry oval, greenish-white, sweet, sprightly, with scarcely any pulp.

Dorr Seedling. (Bourq. Lab. Vin.) Said to be a seedling of Delaware; from Livingston County, New York. Resembles Delaware in form, color, and bunch but the berries are larger and have a foxy odor.

Dry Hill Beauty. Described in *Hermann Grape Nursery Catalog* for 1906 as a red, very sweet grape with medium bunches and small berries.

Dufour. (Linc. Aest.) *Jaeger No. 56.* A seedling of Post-oak (No. 43) crossed with Aestivalis; from Hermann Jaeger. Resembles Herbemont in quality and size of bunch and berries, but is of Catawba color; ripens two weeks after Norton.

Dunlap. (Lab. Vin.) One of Rickett's hybrids; probably the same as Lady Dunlap.

Dunn. (Bourq.?) G. Onderdonk, of Texas, obtained this variety from a Mr. Dunn, of western Texas. It resembles Herbemont but has larger, paler-colored berries and ripens two weeks later.

Duquett. (Lab. Vin.) *Duquett's Seedling.* Noted in the *Rural New Yorker*, 1868, as a new variety from Orleans County, New York. Hardy; berries large, white, transparent; of White Chasselas flavor.

Eames Seedling. (Lab. Vin. Bourq.) A cross between Concord and Delaware; from Luther Eames, Framingham, Massachusetts, about 1887. Bunch large, double-shouldered; berry large, light amber; pulp tender with Muscat flavor.

Early. (Lab.) A pure seedling of Pierce; from Luther Burbank, Santa Rosa, California. According to originator, the variety is vigorous, productive, and ripens two weeks earlier than Concord; berries large, black with lilac bloom; sweet and meaty.

Early Amber. (Lab.) *Amber.* A native grape from the United Society of Shakers, Harvard, Massachusetts; possibly same as Sage. Hardy, productive, healthy; fruit dark amber; sweet, slightly foxy.

Early August. (Lab.) *Burton's Early August.* A native seedling from the United Society of Shakers, Lebanon, New York. Large; early; foxy.

Early August. (Lab.) A twin seedling of Pocklington, offspring of Concord; from John Pocklington, Sandy Hill, New York. Vigorous, productive, healthy, hardy, Concord foliage; bunch medium to large, moderately compact, sometimes shouldered; berry medium, round, greenish-yellow, white bloom; translucent, juicy, sweet, slightly acid flavor; ripens before Moore Early.

Early Bird. (Vin. Lab. Bourq.) A dark red grape from Munson, the parentage being a Lincecumii seedling crossed with Agawam for one parent, and Brilliant for the other.

Early Black. Mentioned in *United States Patent Office Report* for 1853 as an early foreign variety which always ripens in Utica, New York. Ten years later Prince pronounced this Early Black a worthless Labrusca.

Early Black. (Lab.) A seedling from J. B. Moore, Concord, Massachusetts; exhibited before the Massachusetts Horticultural Society in 1880. Bunch and berry large; quality similar to Hartford.

Early Black. (Bourq. Lab. Vin.) According to Mitzky, 1893, a seedling of Delaware; from Jacob Rommel. Vigorous, productive, healthy; bunch medium, compact, shouldered; berries medium, black; firm, sweet; ripens with Hartford.

Early Black July. (Rip. Vin.?) Described by Dufour in 1826 as a prolific bearer; bunches small; berries small, round, black; season early. Dufour suspects it to be a Riparia-Vinifera hybrid.

Early Black Summer Grape. (Lab.?) Noted by Prince in 1830 as an early Virginia variety with fruit of large size.

Early Concord. (Lab.) A seedling from John Kready, Mt. Joy, Lancaster County, Pennsylvania in 1874. Vigorous, hardy; bunch and berries resembling Concord in size, color, taste, and substance; ripens early.

Early Delmonico. (Lab. Vin.) Noted in *Rural New Yorker* for 1886 as a variety resembling Brighton; from Wm. E. Green, Vermont. Green states that the variety is very early and superior to Vergennes or Brighton.

Early Golden. (Lab. Vin.) *Campbell.* A seedling of Triumph; from Munson from seed planted in 1883; disseminated as Campbell but the name was changed in 1894 to Early Golden to avoid confusion with Campbell Early. Weak grower, productive; bunch large, usually shouldered, compact; berry medium, roundish, yellowish-green, gray bloom, usually persistent; later than Catawba.

Early Harvest. (Lab.) Noted in *United States Patent Office Report* for 1855 as an early grape grown in Indiana. Fruit larger and rounder than Isabella; light purple to amber; sweet, juicy, musky flavor.

Early Hudson. (Lab.?) Mentioned by Prince in 1863 as a worthless variety. Berries medium, round, black; early; frequently seedless.

Early June. (Rip.? Lab.?) Described by Warder in 1867 as like *Vitis cordifolia.* Bunch large; berry large, dark; sweet; very early.

Early Lebanon. Given by Warder in 1867 as from Pennsylvania. Bunch medium; berry medium, blue; good; very early.

Early Malvasia. (Vin.?) Noted in *United States Patent Office Report* for 1853 as a foreign variety that habitually ripens at Utica, New York.

Early Market. (Lab. Vin.) A seedling of Elvira, crossed with Bacchus; from Munson, in 1885. Vigorous, productive; subject to mildew; bunch small to medium, moderately compact; berry small, round, black; of fair quality; ripens with Moore Early.

Early Prolific. (Lab.) Supposed to be a Concord seedling. Described in *Missouri Horticultural Society Report* for 1892, as vigorous, very hardy, productive; bunch large, shouldered, compact, handsome; berry large, black, tender, juicy, sprightly, sweet; very good; ripens a few days after Jewel.

Early Purple. (Linc.) A Post-oak native grape found in the woods near Denison, Texas; used by Munson in grape-breeding. Described in his catalog for 1901 as vigorous, healthy; stamens reflexed; clusters large, cylindrical, shouldered; berry large, purple, persistent; of fair quality.

Early Vicks. Noted in the *Wisconsin Horticultural Society Report* for 1886 as a desirable red grape.

Early Wine. (Linc. Rup.) Parentage, *Jaeger No. 70* crossed with a Rupestris seedling; from Munson about 1894. Very vigorous, productive; clusters small to medium, moderately compact; berries medium, black with heavy bloom; fair quality.

Ebony. One of Munson's grapes which was not introduced on account of reflexed stamens. Vines tested at Wisconsin Experiment Station proved very vigorous and productive; bunch and berry medium; black; fair quality.

Echland. Mentioned in the *Ontario Fruit Growers' Association Report* for 1887 as a variety of medium vigor.

Eden. (Rot.) Exhibited by Dr. Samuel Hape, Hapeville, Georgia, before the American Pomological Society in 1887 as a new fruit. Very vigorous, productive; bunches contain from four to twelve black berries; good quality; ripens late.

Edmeston. (Lab.) *Edmeston No. 1.* Supposed to be a pure Concord seedling; from D. G. Edmeston, Adrian, Michigan, in 1890. Vigorous; stamens upright; bunch medium, moderately compact; berry medium to large, dark purple with blue bloom; pulp moderately tough, juicy, vinous, sweet, good; ripens with Concord.

Edward. (Lab.) From Theophile Huber, Illinois City, Illinois. Vigorous; stamens upright; bunch medium, compact, shouldered; berry medium, golden yellow; tender, sweet; ripens about with Concord.

Elaine. (Lab. Vin.) Supposed to be a seedling of Salem; from C. Engle, Paw Paw, Michigan, about 1890. Vigorous, unproductive, hardy, healthy; stamens reflexed; bunch long, loose; berry medium, dark red with bluish-white bloom; juicy, rich, sprightly; very good; ripens early.

Elbling. (Lab.) Mentioned in the *United States Patent Office Report* for 1859 as a northern grape under test in the government experimental garden.

Eleala. (Lab.? Vin.? Bourq.?) Described in the *Missouri Horticultural Society Report*, 1904. Very vigorous; bunch and berry much like Concord; white; quality similar to Wapanuka but flesh is more meaty.

Electra. (Lab. Vin. Bourq.) A seedling of Brighton crossed with Delaware; from Henry B. Spencer, Rocky River, Ohio, about 1890. The berries resemble Delaware but the bunches are larger.

Elizabeth. (Lab. Vin.) From Joseph Hart, near Rochester, New York, about 1845. Productive, medium hardy; bunches large, compact, sometimes shouldered; berries large, oval, greenish-white with reddish tinge in the sun; juicy, pleasant, brisk acid flavor.

Elkton. (Lab.) Described by Adlum in 1828 as an uncommonly large fox grape of a deep purple color.

Ellen. (Lab. Vin.?) From Charles Carpenter, Kelleys Island, Ohio, exhibited as a new variety before the Massachusetts Horticultural Society in 1862. Berries small, amber-colored; subacid, with slight Catawba flavor.

Elpo. (Linc. Rip. Lab.) A seedling of Elvira crossed with Lincecumii; from Munson. Described by the Virginia Experiment Station in 1898 as vigorous, productive; bunch long, rather loose, sometimes shouldered; berry small, globular, pale green, not adherent; skin thin, tough; pulp firm, meaty, tender, mild subacid, almost sweet, agreeable; good; resembles Elvira.

Elsmere. From Texas. Described by Georgia Experiment Station in 1901 as very vigorous, productive; stamens upright; bunch large, moderately compact; berry small, black; ripens just after Concord.

Elvibach. (Rip. Lab.) A seedling of Elvira crossed with Bacchus; from Munson. Vigorous and hardy, very productive; stamens reflexed; clusters medium, sometimes single-shouldered, compact; berries medium to small, roundish, black, heavy blue bloom, not adherent; spicy, good in flavor and quality; skin thin, tender; ripens before Concord.

Elvin. (Lab. Rip. Vin.) Parentage, Elvira crossed with Irving; from Munson in 1885. Stamens erect; cluster medium; berry large, white; ripens mid-season.

Emerald. (Vin. Bourq. Lab.) A supposed cross of Delaware and some foreign variety, possibly Buckland Sweetwater; from Dr. William Saunders, Ottawa, Canada, about 1886. Vigorous, hardy, not productive; stamens upright; clusters small to medium, cylindrical, usually not shouldered, medium to compact; berries small, roundish, jet-black with heavy bloom; juicy, tender, spicy, vinous, mildly sweet.

Emma. (Lab.) Of unknown parentage; from Theophile Huber, Illinois City, Illinois. Lacking in vigor; stamens upright; bunch medium to small, shouldered, compact; berry round, translucent, yellow; rich, sweet, tender pulp; skin very thin, tender.

Enfield. Mentioned in the *United States Patent Office Report* for 1845 as a select American grape grown in North Carolina.

Engle's Seedlings. C. Engle, of Paw Paw, Michigan, about twenty-five years ago originated Elaine, Guinevra, Honey, Iris, Metis, Michigan, Pulpless, Themis, and Vesta. They are all seedlings of Salem. None of them has ever been regularly introduced although some have been sent out for testing.

Ensenberger's Seedlings. About twenty-five years ago, G. A. Ensenberger, of Bloomington, Illinois, originated several varieties of grapes from seed of standard sorts. Of his varieties which received names there are: Herald, Hercules, Isabella Seedling, Juno and Mathilde. None of them has apparently been introduced and none has qualities which would make it permanently popular.

Eolia. (Lab.) According to Mitzky, 1893, a seedling of Concord; from Robert Linville, Forsyth County, North Carolina, and introduced by N. W. Craft, Shore, North Carolina. Hardy; bunch large, compact, shouldered; berry medium, greenish-white; tender, sweet; ripens with Concord.

Epurill. (Linc. Vin. Lab. Bourq.) A seedling of Early Purple crossed with Brilliant; from Munson in 1897. Stamens reflexed; cluster medium; berry very large, red; ripens late.

Erickson. (Lab.) Pronounced a worthless Labrusca by Prince in 1863.

Essex County (Mass.) **Seedling.** (Lab.) Given in the *American Pomological Society Report*, 1862, as from Thomas C. Thurlow; a variety of fox grape; common all through the country.

Estella. (Linc. Rup. Rip. Lab. Vin.) A seedling of *Jaeger No. 72* crossed with Rommel; from Munson in 1899. Stamens erect; cluster medium; berry medium, white; ripens late.

Etawa. (Lab. Vin.?) *Woodruff's No. 1.* Described in the *American Pomological Society Report*, 1883, as an accidental seedling from W. W. Woodruff, Vineyard P. O., near Griffin, Georgia. Vigorous, foliage luxuriant, shows Labrusca characters; bunch large; berry large, round, blue; pulp dissolving, vinous; best; fruit showy and hangs on the vines for two months.

Eudora. (Lab.) Noted as a worthless Labrusca by Prince in *Gardener's Monthly* for 1863.

Eufaula. (Linc. Rup. Bourq. Lab. Aest. Vin.) A seedling of America crossed with Laura; from Munson in 1895. Weak grower; stamens erect; cluster large, loose; berry small, red; ripens late.

Eugenia. (Vin. Lab.) A seedling of White Frontignan crossed with Catawba; from J. T. Clark, of Washington. Said to have been raised from seed of the same berry that produced the Columbia, a white grape. A red grape of good quality; late.

Eugenia. (Lab.) A seedling of Concord; from T. B. Miner. Vigorous, hardy; bunch medium; berry medium, white; fair quality; ripens early.

Eumedel. (Lab. Vin. Aest. Bourq.) A seedling of Eumelan crossed with Delaware; from Munson. Of medium growth, usually hardy, variable in productiveness, susceptible to mildew; stamens upright; clusters medium to small, shouldered, compact; berries small, roundish, black, heavy blue bloom, persistent; flesh tender, slightly foxy, sweet to agreeably tart; good. The vine has pronounced Labrusca characters.

Eumorely. (Lab. Aest. Vin.) Parents, Eumelan crossed with Moore Early; from Munson, in 1887. Stamens erect; cluster large; berry large, black; ripens early. Discarded by originator.

Eva. (Lab.) *Miller's No. 2.* A Concord seedling; from Samuel Miller, Calmdale, Pennsylvania, about 1860. On account of its close resemblance to its sister Martha, it was dropped by the originator. Medium in vigor, tender; stamens upright; bunch small, compact; berries medium, greenish-yellow, sweet, of mild flavor, lacks sprightliness; ripens about with Martha.

Evaline. (Lab. Vin.) A seedling of Ideal; from John Burr, Leavenworth, Kansas. Vigorous, hardy, productive; bunch medium, compact; berry medium, white with light bloom; very tender, juicy, sweet, sprightly, vinous; skin thin, tough; ripens before Concord.

Everett. Noted in the *United States Patent Office Report*, 1860, as a native grape under propagation at the government experimental garden.

Ewing. (Lab. Vin.) *Ewing's Seedling.* A seedling of Isabella; from Jefferson City, Missouri. Husmann, in 1869, considered this variety an improvement on its parent which it resembles.

Exquisite. (Lab. Bourq. Vin.) A seedling of Delaware; from J. Stayman, Leavenworth, Kansas. Moderate grower, hardy, healthy, productive; bunch medium, compact; berry small, black, slight bloom; very tender, juicy, sweet, sprightly, vinous; ripens with Delaware.

Extra. (Linc. Lab. Vin.) *Big Extra.* A seedling of Post-oak crossed with Triumph; from Munson. Vigorous, healthy, productive; cluster large, usually shouldered, compact; berry medium to large, dark purple or black; good in quality in the South; does not mature at Geneva.

Fallwicke. An undescribed variety from Joseph Fallwicke, Wartburg, Morgan County, Tennessee, about 1860.

Fancher. (Lab. Vin.) *Saratoga.* Introduced by T. B. Fancher of Lansingburg, New York, over fifty years ago. A seedling of Catawba and so similar to it that many consider them identical.

Fanny Hoke. A chance seedling of Aestivalis or Bourquiniana reported from North Carolina in 1871. Vigorous, short-jointed; cluster rather large, not shouldered; berry medium, black; sweet, sprightly.

Farmers Club. A seedling from David Thompson of Green Island, near Troy, New York, over forty years ago. A green grape, undescribed.

Farrell. A seedling found in the garden of a Dr. Farrell and introduced by Dr. Stayman of Leavenworth, Kansas, about 1880. Hardy, vigorous, productive; clusters medium, tapering; berries large, light yellowish-green, roundish or slightly oblate; pulp firm, moderately juicy, sweet; good; skin thin, tender; ripens with Concord.

Far West. (Aest.) A variety of Aestivalis; found by Hermann Jaeger in the woods of southwest Missouri, about 1870. Vigorous, hardy; leaves large; clusters large, shouldered; berries small; skin thin, tough, black with blue bloom; pulp soft, tender, meaty, sweet and spicy; seeds few; ripens with Norton.

Feemster. (Lab.) Cluster and berry small; foxy and worthless.

Feemster Favorite. (Lab.) From Indiana. Hardy; cluster medium; berry large, green.

Fena. (Lab. Bourq. Vin.) A seedling of Jewel; from Ludwig Hencke, Collinsville, Illinois. Similar to its parent but more vigorous and with fruit larger in bunch and berry.

Fisk. (Lab. Vin.) Probably a seedling of Isabella which it resembles very closely, It was originated by John Fisk Allen of Salem, Massachusetts, about fifty years ago.

Fitchburg. (Lab.) *Fox; Free Black.* A local New England variety of Labrusca, apparently never known in cultivation.

Flickwir. (Rip. Lab.) Tested by the United States Department of Agriculture about 1860 and proved to be the same as Clinton.

Flora. (Vin. Lab.) A Vinifera hybrid; from A. M. Spangler of Philadelphia, about the middle of the last century. Vine hardy and productive; cluster small, compact; berry medium, oval, dark purplish-red; somewhat pulpy, juicy; late.

Florence. (Lab. Vin. Aest.) Originated by Marine, about 1875. It is a probable cross between Eumelan and Union Village and is a large, handsome grape, resembling in some respects the Isabella.

Florence. (Lab.) A variety known for about thirty years and which has attracted considerable attention on account of its extreme earliness, ripening earlier even than Hartford. Hardy, vigorous; bunches small, imperfect; berries medium, black; resembles Hartford in quality.

Flower of Missouri. (Lab. Bourq. Vin.) A Delaware seedling; from William Poeschel, Hermann, Missouri. Said to resemble Walter.

Flowers. (Rot.) A Rotundifolia, the origin of which is unknown; introduced about 1850. Vine tender, very vigorous, very productive; berries large, oval, growing in clusters of twelve to fifteen; blossoms self-sterile; ripens very late; quality not as good as Scuppernong. Probably a strain of other than Rotundifolia blood is present.

Fluke's Hybrids. Newton K. Fluke, of Davenport, Iowa, has originated a series of hybrids which are now being tested but as yet none has been introduced.

Foster. (Lab. Vin.) A seedling of Niagara; from John Reichenbach, Columbus, Ohio. A white grape said by the originator to be of high quality.

Fox. This name has been applied to many varieties of Labrusca and Rotundifolia. It does not indicate any particular variety.

Framingham. (Lab.) Resembles Hartford so closely that they can hardly be distinguished. It was raised by J. G. Morneberg, Saxonville, Massachusetts, about 1850.

Frances E. Willard. (Lab.? Bourq.? Vin.) A seedling noted in the *Rural New Yorker* for 1894. Said to resemble Delaware but with a thicker skin.

Franklin. *French grape.* A wild grape found at least sixty years ago on an island in French Creek, Crawford County, Pennsylvania. It resembles Clinton very closely but the wood is of lighter color, the fruit sweeter, and it matures earlier.

Fredonia. (Lab. Vin.) From Seth Avery of Fredonia, New York. Vigorous, hardy, productive; tendrils continuous, sometimes intermittent; leaves of the Labrusca type; clusters medium, sometimes shouldered; berries medium, oval, light green with gray bloom, some small, dark-colored dots; sweet; good.

Fritz. A seedling of Roenbeck; raised by F. Roenbeck, of Bergen Point, New Jersey. Vigorous; cluster large, compact; berry white; skin thin, tough; juicy; ripens with Concord.

Frost. A class name commonly applied in America to varieties of Cordifolia though sometimes to those of Riparia.

Gallup Seedling. (Lab. Vin.) Probably a seedling of Salem; from Adams Basin, New York. Resembles Salem; berries a little larger; quality good; excellent keeper; ripens with Concord.

Garber. (Lab.) A seedling from J. B. Garber, Columbia, Pennsylvania. Vigorous, hardy, very productive; bunch below medium, compact; berries medium, black, with very dark juice; fair quality; ripens early.

Garber Red Fox. (Lab. Vin.?) Produced by J. B. Garber, of Pennsylvania, from the same lot of seed as Albino. Fruit resembles the wild red Labrusca, except that it ripens later and is sweeter.

Garfield. (Rip. Lab.) A seedling of Missouri Riesling, from John Reichenbach, Columbus, Ohio, about 1902. Vigorous; berries large, green; rich and sweet.

Garnet. (Vin. Rip. Lab.) A seedling of Red Frontignan and Clinton; from Dr. A. P. Wylie, Chester, South Carolina. Bunch and berries larger than Clinton; deep garnet color; flavor and texture that of a Vinifera but foliage that of Clinton.

Garrigues. (Lab. Vin.?) Probably a seedling of Isabella; from Edward G. Kingsessing, Philadelphia, Pennsylvania. Resembles Isabella but is a few days earlier.

Gassman. (Aest.) Noted in the *United States Department of Agriculture Report* for 1869 as a variety of Aestivalis.

Gauger. Described in the *Illinois Horticultural Society Report* for 1901 as vigorous and healthy, but too poor in flavor to be desirable.

Gazelle. A seedling from J. H. Ricketts. Vigorous, healthy and productive; bunches medium, compact; berry small, greenish-white; sprightly, sweet, pleasant.

General Pope. (Aest.) A seedling from John Burr, of Leavenworth, Kansas, about 1880. Very vigorous, hardy, healthy and productive; bunch and berries smaller than those of Concord; without foxiness.

Genesee. (Lab. Vin. Bourq.) A seedling of Delaware crossed with Iona; from near Rochester, New York, about 1880. Vigorous, productive, healthy; bunch large, compact; berries large, red; high quality.

Gerbig No. 2. (Lab. Vin. Aest.) A seedling of Eumelan, open to cross fertilization; from A. V. Gerbig, Archbald, Pennsylvania, about 1890.

Gerbig No. 10. (Lab. Vin. Aest.) A seedling of *Gerbig No. 2*, open to cross fertilization; from A. V. Gerbig, about 1892. Vigorous, hardy, productive; cluster small, compact; berry medium, slightly oval, yellowish-green; juicy, slightly meaty, sweet, mild; good.

German Seedling. (Rip.) Noted in the *Illinois Horticultural Society Report*, 1871, as much like Clinton but not as productive.

Giant. (Rup.) A wild male Rupestris; found by Munson in Missouri. It is now discarded by him.

Gibb. (Rip.) From Magloire Dery, St. Hilaire, Canada. Slow in growth, hardy; bunch small, loose, sometimes shouldered; berry small, black with heavy bloom; melting, juicy; good.

Gilbert's White Shonga. (Lab. Vin.) According to Floy-Lindley, 1833, this is a wild grape found by Garret Gilbert on the Shonga Mountains, New York, in 1825. Similar to Isabella in habits; bunch and berries resemble Isabella in size and shape; white with purple tinge on sunny side; sweet; good.

Gill Wylie. (Lab. Vin.) Noted in the *Bushberg Catalogue*, 1883, as a new grape from Dr. A. P. Wylie, Chester, South Carolina. Foliage healthy, of Labrusca type; bunch large, loose, shouldered; berry large, oblong; texture soft, rich; ripens with Concord.

Gilt Edge. (Lab. Bourq. Vin.) A seedling of Delaware; from Dr. L. C. Chisholm. Medium in vigor, shy bearer; stamens upright; bunch small, compact; berries small, yellowish-green; subacid, delicate flavor; ripens a few days later than its parent.

Gold Dust. (Lab. Vin. Bourq.) *Munson No. 22.* A seedling of Lindley crossed with Delaware; from Munson, about 1880. Vigorous, productive; stamens upright; clusters medium to above, usually shouldered, loose; berries medium, roundish, yellowish-green with thin gray bloom, persistent, with tendency to shrivel before ripening; juicy, foxy, mild; fair in quality.

Golden Beauty. (Lab.) A seedling of Perkins; from J. B. Miller, Anna, Illinois. Bunches short; berries medium; sweet; good; long keeper.

Golden Berry. (Vin. Lab.) *Culbert No. 5.* A white seedling of Hartford and General Marmora; from Dr. W. A. M. Culbert, Newburgh, New York; exhibited as a new fruit before the American Pomological Society in 1877; hardy and a free bearer.

Golden Clinton. (Rip.) *King.* A chance seedling, probably of Clinton, found in a garden in Rochester; fruited in 1857; introduced by William King. Apparently the same as Clinton except that it is less productive and the berries are greenish-white.

Golden Concord. (Lab.) *Valle's White Concord.* A white seedling of Concord; from John Valle, New Haven, Missouri. Reported as inferior to Martha.

Golden Drop. (Lab. Vin. Bourq.) A seedling of Adirondac crossed with Delaware, from C. G. Pringle, Vermont, in 1869. Medium in vigor, shy bearer; stamens upright; clusters small, loose; berries small, roundish, greenish-yellow, persistent; firm, juicy; tender, sweet, mild; good.

Golden Gem. (Lab. Vin. Bourq.) A seedling of Delaware crossed with Iona; from J. H. Ricketts; first exhibited before American Pomological Society in 1881. Vigorous, hardy, productive; clusters small, shouldered, compact; berries small, roundish, golden yellow, thin bloom; juicy, sweet, vinous; very good; ripens with Concord.

Golden Grain. (Lab. Vin. Bourq.) A seedling of Lindley crossed with Delaware; from Munson. Vigorous, doubtfully hardy, productive; stamens upright; clusters medium, frequently shouldered, compact; berries small, oval, light green, thin bloom, inclined to drop and to shrivel; moderately juicy, foxy, sweet; fair quality.

Goldstein. (Lab.) *Goldstein's Early.* From Mississippi, about 1897; similar to Champion. Vigorous, hardy, productive; stamens upright; clusters medium, shouldered, compact; berries large, round, black; poor quality; ripens early.

Good Adle. (Vin.?) Noted in the *Wisconsin Horticultural Society Report* for 1872 as a fine white German grape; exhibited by a Mrs. Curtis, Milwaukee.

Goodman. (Lab.) Noted by Prince in *Gardener's Monthly* for 1863 as a worthless Labrusca.

Governor Ireland. (Lab.) A pure seedling of Moore Early; from Munson. Lacks vigor, medium in productiveness; bunch large, loose; berry large, globular, black with whitish bloom; resembles Concord but is much coarser; subject to rot.

Governor Ross. (Lab. Vin.) A seedling of Triumph; from Munson and introduced in 1894. Weak to medium in growth, not productive; stamens upright; nearly self-sterile; bunch large, oblong, compact; berries large, oval; sprightly, sweet; good; rots badly.

Graham. An accidental seedling, supposed to have been a cross of Bland and Elsinburgh; from W. Graham of Philadelphia, about 1850. Cluster of medium size, shouldered, not compact; berry large, round, purple; juicy, sweet, sprightly; very good.

Gravel. Received by the United States Department of Agriculture in 1863 for testing.

Grayson. (Lab.) Seedling of Moore Early; raised by Munson. A black, large-berried variety with clusters medium to large; moderately vigorous and productive; flavor sweet but lacks character; good.

Gray's Seedlings. A number of seedlings of Concord were raised by W. C. Gray of Atwood, Illinois, about 1890. None attained prominence.

Green Castle. (Lab.) A large-clustered, large-berried black seedling of Concord; from D. S. Marvin.

Green Ulster. (Lab.) A light green seedling of Concord; from J. B. Moore, of Concord, Massachusetts, about 1870.

Greer. (Doan.) A wild male vine of *Vitis doaniana* found by Munson in Greer County, Oklahoma.

Grein Extra Early. (Rip. Lab.) *Grein No. 7.* A yellowish-green seedling of Taylor; from Nicholas Grein. Vigorous, productive; bunch medium; berry small with speck at distal end; good; ripens with Concord.

Grein's Seedlings. Nicholas Grein, of Hermann, Missouri, over thirty years ago planted a number of seeds of the European Riesling, and also seeds of Taylor. He stated that the Taylor seedlings failed to germinate but that the European Riesling seeds germinated and of the resulting seedlings Missouri Riesling, Grein Golden and Grein Extra Early were named and introduced. As they are all of the Riparia type, very similar to Taylor, and show no trace of Vinifera, it has always been supposed that Grein had his seeds confused and that it was the European Riesling that failed to germinate, Taylor being the real parent of these varieties.

Grevaduly. A Massachusetts seedling of over fifty years ago, mentioned in the *United States Patent Office Report* of 1859.

Greverson. A seedling received by the United States Department of Agriculture over fifty years ago.

Grote. (Rip.) A wild variety of *Vitis riparia* secured by Munson from Mauston, Wisconsin. Stamens reflexed; cluster small; berry small, black; ripens early.

Grove. (Lab. Vin.) A cross of Clinton with Concord. Vigorous, hardy, productive; cluster and berry of medium size and of pale green to amber color; flesh tender, sweet and spicy; ripens shortly after Concord.

Guesta. A variety mentioned in the *United States Patent Office Report* for 1860 as being blue; sweet, slightly pulpy, of agreeable flavor.

Guignard. *Black Guignard.* Origin unknown but at one time raised by Longworth, of Ohio. Vigorous, productive; small, brown berries; high quality.

Guinevra. (Lab. Vin.) From C. Engle, of Paw Paw, Michigan; a seedling of Salem. Hardy, vigorous, productive; clusters large, sometimes shouldered, compact; berry large, yellowish-green; very late.

Gula. (Linc. Lab. Rup.) A seedling of America crossed with Beacon; from Munson in 1899. Stamens erect; cluster large; berry large, black; ripens mid-season.

Gulch. (Linc. Rup.) Parents, *Jaeger No. 70* crossed with a seedling Rupestris; from Munson in 1888. Stamens erect; cluster large; berry medium, black; ripens late; now discarded by the originator.

Hadden Seedling. (Lab. Vin.) From a Mr. Hadden, of Pulteney, New York, about 1890. Vigorous; cluster small, compact; berries red with a peculiarly wrinkled skin; pleasant, sweet, Muscat flavor.

Hagar. Noted in the *Illinois Horticultural Society Report*, 1893, as one of the varieties exhibited at the World's Fair.

Halifax. (Lab.) *Weller's Halifax.* Noted by Sidney Weller, Brinkleyville, Halifax County, North Carolina, in *United States Patent Office Report* for 1845, as a native grape.

Halifax Seedling. (Lab. Vin.) A seedling of Halifax by a Vinifera; from Sidney Weller, about 1840. Fruit like Catawba but sweeter. Used by Dr. A. P. Wylie in the production of new varieties.

Hall. A seedling from David Hall, Urbana, Ohio; first mentioned in 1858. Berries larger and better flavored than Clinton, but not equal to Isabella; nearly black; ripens earlier than Isabella.

Hall. (Lab.) From a Mr. Hall, Michigan; received at the Michigan Experiment Station in 1893. Very vigorous, productive; bunches below medium, cylindrical, compact, shouldered; berries above medium, round, black; ripens with Early Victor.

Hamilton. (Vin. Lab.) A seedling of Mills; from a Mr. Gardner, of Rochester, New York. Less vigorous than parent; bunches large, shouldered, compact, attractive; berries adherent; pulp tougher than Mills and the flavor is inferior; keeps well.

Hamill Seedling. (Lab. Vin.?) Tested by the United States Department of Agriculture about 1860 and proved to be so near like Isabella that the two could not be distinguished.

Hardy Chasselas. (Vin. Lab.) From a cross between Diana and Royal Muscadine; from Jacob Moore; exhibited before the Massachusetts Horticultural Society, 1865. Hardy, with Vinifera foliage; juicy; good.

Harmer. (Lab. Rip.) A cross between *Vitis labrusca* and *Vitis riparia*, found in Hartford County, Connecticut, by D. Alderton, Marlboro, New York. Very vigorous, healthy, hardy, medium in productiveness; bunch small, compact; berries black with hard pulp; sweet, spicy; late.

Harmer Seedling. (Lab. Vin.) Noted in the *American Horticultural Annual* for 1870 as a native red grape with a small Catawba-like berry having hard pulp.

Harrell. (Lab.) A chance seedling; from Obed Harrell, Chrisman, Illinois, about 1890. Vigorous, productive; cluster medium, compact; berry medium, white, round; very sweet.

Harriet Beecher. From William M. Marine. Bunch small; berry large, round, dark red; pulp soft; skin thick; good.

Harris. (Bourq.?) *Old House Grape.* Found growing near a deserted house by a Mr. Harris of Milledgeville, Georgia. Described in *Horticulturist* for 1857 as vigorous; clusters medium, shouldered, compact; berries small to medium, round, black with blue bloom; a little pulpy, sweet, juicy, agreeable; very good.

Harrison. (Lab.) A seedling of Concord; from Isaac Staples, Dayton, Ohio. Thrifty as Concord, hardy; foliage thick, healthy; bunch large, compact; berries medium, red, pure flavor; ripens with Concord.

Harrison. (Lab.) T. T. Lyon, in the *Michigan Horticultural Society Report* for 1881, thinks this is *Woodruff's No. 2.* A black grape of the character of Concord, but larger in both berry and bunch and a week earlier.

Harvard Seedling. (Lab.) Noted in the *United States Patent Office Report* for 1853 as a native seedling raised at Harvard, Worcester County, Massachusetts; may be synonymous with Northern Muscadine.

Harwood. (Bourq.) *Improved Warren; Sacks of Wine.* From Major Harwood, Gonzales, Texas; noted in the *American Pomological Society Report* for 1881. Like Herbemont but not as vigorous and the fruit is about twice as large, lighter purple, and ripens four or five days earlier.

Haskell's Seedlings. George Haskell, of Ipswich, Massachusetts, was one of the early and persistent grape-breeders of the last century. His efforts were similar to those of Rogers in that he produced direct hybrids of Vinifera with early ripening selected Labruscas. He used several varieties of both parent species and produced several thousand seedlings. Experts to whom samples were sent affirmed that their quality was of the best. A few were sent out for testing but the most of them were destroyed as Mr. Haskell did not think that any of the offers would recompense him for the cost of production. Those sent out were highly commended at first but soon dropped from sight. The only named variety of his is Ruby.

Haskew. Noted in the *American Horticultural Annual* for 1871 as a native grape from W. B. Kelly, Abingdon, Virginia.

Hattie. (Lab. Vin.) A seedling of Michigan or Catawba; from N. R. Haskell, Monroe, Michigan; fruited in 1861. Leaves similar to Catawba but smaller; bunch medium, loose; berries medium, slightly oval, red with white bloom; little pulp, pleasantly vinous; ripens with Concord.

Hattie. (Lab.) Given by Mitzky, 1893, as a chance seedling from J. A. Putnam, Fredonia, New York. Productive; bunch short, compact; berries medium, black; very sweet, flavor similar to Aminia; ripens with Moore Early.

Hattie. (Lab.) Noted by Mitzky, in 1893, as a supposed seedling of Concord; from Benjamin Stratton, Richmond, Indiana; nearly identical with Concord. Probably the same variety that Bush mentions as being introduced by E. Y. Teas, of Richmond.

Hatton. (Lab. Rip.) A cross between Faith and Ives; from F. E. L. Rautenberg, Lincoln, Illinois. Vigorous, hardy, healthy, very productive; foliage resembles Faith, and fruit, Telegraph; bunch medium, compact; berry medium, black; vinous; ripens a little after Concord; a better keeper.

Hattus. (Lab. Vin.?) Noted by Mead in 1867 as perhaps the same as Hattie. Said to be a seedling of Catawba, but of smaller size and quite acid; of claret color.

Hawkins No. 3. From William Hawkins, Hamilton, Ontario. Exhibited as a new grape at the American Pomological Society meeting in 1879. Described as hardy; bunch and berry large; white; vinous, high flavored; best.

Hawkins No. 10. From same grower as above and exhibited at the same time and place. Hardy; bunch and berry small; white; sweet, very good; skin tough.

Hearthenge. Listed with varieties of grapes under test by the United States Department of Agriculture in 1863.

Helen. Noted by Buchanan as a grape grown and exhibited by N. Longworth in 1846.

Helen Keller. (Lab. Vin. Aest.?) Said to be an accidental seedling from James Nicholson; sent out in 1895 by P. R. De Muth, Connellsville, Pennsylvania. Very vigorous, hardy, usually productive; stamens reflexed; clusters medium, usually shouldered, loose; berries large, roundish, dark dull red with lilac bloom, persistent; juicy, tender, vinous, good; skin thick, rather tender, inclined to crack. Resembles Salem in appearance; worthy of further trial.

Helpfer. (Lab.) According to Mitzky, 1893, from Theophile Huber, Illinois City, Illinois. Medium in vigor and hardiness; bunch and berries medium, white; good.

Henrico. Noted by Prince in his *Treatise on the Vine*, 1830, as a native grape found in Henrico County, Virginia. Berries size of Bland; clusters half the size; pale blue or purplish; sweet, agreeable.

Henry. (Lab.) From Theophile Huber. Described by Mitzky in 1893; bunch size of Concord; berry large, round, white; juicy, sweet, foxy; ripens with Concord.

Henshaw. A native grape from Martinsburg, Virginia. Described in *United States Patent Office Report* for 1859 as purple and of medium size.

Herald. (Lab.) Received from G. A. Ensenberger, Bloomington, Illinois, in 1889. Vigorous, productive; foliage good; stamens upright; bunch medium, compact; berry large, poor in quality; ripens early.

Herbemont Seedling. (Bourq.) Noted by Warder in 1867 as from Ohio; like its parent; very good; promising for wine.

Hero. (Lab.) A bud variation of Concord; introduced by Ludwig Hencke, Collinsville, Illinois; exhibited at World's Fair in 1893. Moderate in growth; apt to overbear; foliage healthy; bunch large, showy; berry very large, black; in flavor similar to Concord.

Hertia. (Lab.) A seedling from C. Engle, Paw Paw, Michigan; brought to notice in 1890. Bunch medium, compact; berry large, round, purple; juicy, sweet, slightly foxy; good; mid-season.

Hettie. Husmann in the *Grape Culturist* for 1869 describes this variety as much like Isabella, but not better. This may be the grape which Downing in 1869 describes as "bunch small; berry black; flesh somewhat pulpy; a poor grower and bearer; ripens early."

Heunis. (Lab. Bourq. Vin.) A seedling of Delaware; from W. W. Jones, Douglas County, Illinois, about 1870. Hardy, productive; bunch resembles Clinton in shape; berry medium, white; good.

Hexamer. (Linc. Lab. Vin.) *Dr. Hexamer.* A seedling of a wild Post-oak crossed with Triumph; from Munson, introduced in 1893. Vigorous, hardy, productive, similar to America in foliage and fruit characters; tendrils intermittent; stamens reflexed; clusters medium, often shouldered, variable in compactness; berries medium to below, slightly oblate, black with heavy bloom, persistent; tender, spicy, nearly sweet, with Post-oak flavor.

Hiawasse. Discarded by the United States Department of Agriculture in 1863.

Hine. (Lab. Vin.) *Hine Seedling.* Raised by Jason Brown (son of the patriot, John Brown), at Put-in-Bay, Ohio, in 1851, from seed of Catawba and Isabella grapes growing close together. Hardy, productive; bunch and berry much like Catawba in size and form, but darker; tender, sprightly, sweet, rich; ripens earlier than Catawba.

Hock. (Bourq. Aest. Lab.) A seedling of Herbemont crossed with Norton; from Munson about 1890.

Hofer Seedling No. 2. (Lab.) A volunteer grape from the Concord vineyard of A. F. Hofer, Iowa, in 1876. Described as an improved Concord; berries larger and the clusters more compact; ripens with Worden.

Holmes. (Bourq. Lab.) A chance seedling believed to be a cross between a variety of the Herbemont group and a Labrusca; from Galveston, Texas. Onderdonk states that it combines, in its growth and apperance, both Aestivalis and Labrusca blood. Very productive; fruit about the size and color of Lindley.

Honey. Given in Prince's *Treatise on the Vine* as a native variety, grown near Philadelphia about 1827. Leaves deeply five-lobed, indentures irregular, under surface covered with down; clusters medium, compact; sweet.

Honey. (Lab. Vin.) A seedling of Salem; from C. Engle, Paw Paw, Michigan, about 1890. Vigorous, hardy, very productive; bunch medium, compact, shouldered; berry medium to large, white, almost translucent; of honeyed sweetness; ripens with Worden.

Honey Dew. (Lab.) *Yonker's Honey Dew; Youngken's Honey Dew; Yunker's Honey Dew.* A seedling of Concord which was thought to have been fertilized by Delaware; from David Youngken, Richlandtown, Pennsylvania. Lacks vigor; fairly productive, foliage healthy; bunch medium, long, compact; berry large, round, black with blue bloom; pulpy, very foxy, sweet; ripens after Hartford.

Hooker. Given in the *United States Department of Agriculture Report* for 1869 as a Labrusca.

Hopeon. (Linc. Lab. Vin. Bourq.?) A seedling of Big Hope crossed with Carman; from Munson in 1899. Stamens erect; cluster large; berry large, white; ripens late.

Hopherbe. (Linc. Bourq.) A seedling of Post-oak crossed with Herbemont; from Munson. Very vigorous, productive; stamens upright; bunch large, very compact; berry medium, of dark copper color; quality fair; ripens late.

Hopican. (Lab. Vin. Aest. Rip.) A seedling of Eumelan fertilized by Elvira; from D. S. Marvin, Watertown, New York, about 1889. Vigorous, not always hardy, productive; stamens upright; clusters large, sometimes shouldered, compact; berries medium, roundish, unattractive yellowish-green, persistent, moderately juicy, tender; fair in quality; skin thin, adheres to pulp; ripens with Concord.

Hopkins. (Linc. Aest. Lab.) A seedling of Post-oak crossed with Cynthiana; from Munson. Vigorous, not always hardy, variable in productiveness, susceptible to mildew; stamens upright; clusters small, frequently shouldered, very compact; berries small, oblate, black with heavy bloom, persistent; soft, juicy, tough, spicy, vinous; fair in flavor; ripens after Catawba.

Horner. (Lab.) A seedling of Concord; from Joel Horner, Delair, New Jersey; received at this Station in 1894. Moderately vigorous; bunch large; berries small, round, black with blue bloom; sweet, slightly foxy; skin thick, tough; ripens early.

Hoskins Seedling. A seedling which came up between an Alvey and a Delaware; from A. Hoskins, Toronto, Ontario, in 1886. Bunches large, compact; berries similar to Clinton in size and color but inferior in quality; ripens unevenly and late.

Howell. From Edward Tatnall, Wilmington, Delaware, about 1860. Bunch large; berries medium, black; pulp firm; skin thick; good; ripens early.

Hubbard Seedless. (Lab.) Grown by the T. S. Hubbard Company, Fredonia, New York, but has not been disseminated. Vigorous, very hardy, somewhat unproductive, of Labrusca type; quality equal to Delaware; berries the size of Delaware but darker in color.

Huber. (Rip. Lab.) A seedling of Taylor; from Jacob Rommel, Morrison, Missouri. Vigorous, healthy; bunch smaller than Concord; color of Catawba; late.

Huber's Seedlings. Theophile Huber of Illinois City, Illinois, something over twenty years ago originated a large number of seedlings which he sent out for testing. He writes that, with the exception of *Huber No. 12*, which is from Hartford, his seedlings are from mixed seed of Concord, Clinton, Marion, Rebecca, Isabella, Delaware, Catawba and Creveling. Of his named sorts there are: Albert, Alphonse, Bertha, Braendly, Doctor Warder, Edward, Emma, Illinois City, Marguerite, Marie Louise, and Theophile. Most of Huber's grapes were named before disseminating but a few, as follows, have gone out with numbers.

No. 11. As tested by the Virginia Experiment Station, weak, unproductive; stamens upright; bunch small, loose; berries large, black; poor quality; ripens between Concord and Catawba.

No. 12. Described by Illinois Experiment Station as very vigorous, healthy, promising; bunch medium, oblong, sometimes shouldered, compact; berry small to large, round, black with heavy bloom; juicy, tender, sweet, very rich; skin tender; about a week later than Concord.

No. 13. Described by the Virginia Experiment Station as weak; stamens upright; bunch small, compact; berry medium, coppery in color; ripens late.

Hudson. (Lab.) Given by Downing in 1857 as from Mr. Calkins, Hudson, New York. Growth similar to Isabella; two or three weeks earlier; bunch and berry much the same, but less sprightly and not quite so rich.

Hudson. (Lab. Vin.) A seedling of Rebecca; from A. J. Caywood, Marlboro, New York, about 1870. According to Caywood and several prominent horticulturists, this variety is identical with Prentiss. Caywood says he refrained from introducing this grape on the advice of several grape experts but sent it out for testing to several persons amongst whom was J. W. Prentiss, introducer of the Prentiss.

Hulkerson's Seedlings. (Lab. Vin.) Twenty-one seedlings from a single bunch of Wilder, from W. G. Hulkerson and Company, Oriel, Michigan, were shown before the American Pomological Society in 1879. None was better than the parent, but all were interesting as they showed much variation in size of berries and in color, the latter ranging from black to red.

Humboldt. (Rip. Bourq.?) A seedling of Louisiana, probably crossed with Riparia; from Frederick Muench, Marthasville, Warren County, Missouri. Vigorous vine of Riparia character, hardy, healthy; stamens upright; cluster medium, sometimes shouldered, compact; berries medium, oblate, dull golden green with thick bloom, amber when fully ripe; sweet, of Elvira flavor; ripens with Catawba.

Hunterville. Mentioned by Sidney Weller, in the *United States Patent Office Report* for 1845, as a native variety, subject to rot, grown in North Carolina.

Huntingdon. (Rip.) *Australian.* Vigorous, hardy, productive, subject to mildew; resembles Clinton; bunch small, shouldered, compact; berry small, round, black; juicy, vinous; drops badly; ripens unevenly.

Husmann. (Linc. Vin. Lab.) A seedling of Armlong crossed with Perry; from Munson, introduced in 1900. Vigorous, prolific, subject to mildew; clusters very large, long, cylindrical, compact; berries medium, globular, black, with tendency to drop; juicy, tender, more vinous than Black Eagle but less sweet; skin thin, tough; ripens with Herbemont.

Hutchinson. (Long.) A wild variety of *Vitis longii;* secured from Hutchinson County, Texas, by Munson. Stamens reflexed; cluster small; berry small, black; ripens mid-season.

Hutporup. (Long. Linc. Rup.) A seedling of Hutchinson fertilized by Porup; from Munson. Stamens reflexed; cluster small; berry small, black; ripens early.

Hyde Black. (Lab.) Given in Prince's *Treatise on the Vine*, 1830, as a native variety found on the farm of Wilkes Hyde, near Catskill, New York. Very vigorous and productive; berries medium, black; juicy, tender, rather astringent, foxy.

Hyde Eliza. (Lab. Vin.) A seedling from Wilkes Hyde, about 1828. This variety so closely resembles York Madeira that it has caused much confusion. Charles Downing

in the *Horticulturist* for 1860 says that it is more vigorous; bunch and berry larger, somewhat like the Isabella, but a week or two earlier.

Icterida. (Aest. Lab. Linc. Bourq.) A cross of Gold Coin with Bull; from Munson, about 1899. Vigorous, healthy; cluster medium, well-formed; berry large, light yellow, persistent; skin thin, tough; pulp of medium tenderness, juicy, sweet; good; ripens about with Gold Coin.

Ida. (Lab.) A white seedling produced by T. B. Miner, from seed of Concord. Vigorous, hardy but not productive; cluster large; berry large and of light green color; late.

Iden. *Lake.* Noted in the *American Pomological Society Report* for 1858 as worthless.

Illinois City. (Lab.) A seedling of Concord; from Theophile Huber, about thirty years ago. Vigorous, not always hardy, unproductive; cluster small; berries medium, dull yellowish-green; skin thin and tender; foxy, mild, sweet; good. The flowers are sterile and the fruit ripens with Concord.

Illinois Early. From G. A. Ensenberger, Bloomington, Illinois, about 1897. Vigorous; clusters small; berries medium, black; ripens a few days later than Moore Early.

Illinois Prolific. Noted as worthless in *Gardener's Monthly* for 1863.

Improved Purple Fox. (Lab.) Buchanan mentions this variety as having been raised and exhibited by Longworth in 1846.

Indiana. Mentioned by Buchanan in 1852 as having been tested by Warder in 1846 and found worthless.

Indian Field. A staminate vine mentioned in *Gardener's Monthly* for 1863.

International. (Vin. Rip. Lab.) A seedling of Marion fertilized by White Frontignan; from N. B. White, Norwood, Massachusetts, about 1888. Vigorous, not always hardy, very productive; clusters large; berries large, light red; flavor resembles Delaware but with an Aestivalis taste; very good.

Iola. (Rip.) Originated by John Burr. Described by Stayman: "bunch medium, compact; berry medium, white; skin thin, tough; pulp tender, juicy, sprightly, rich, sweet, best; vigorous, hardy, healthy and productive, free from rot and mildew; ripe before Concord. * * * of the Riparia class."

Iowa. Mentioned about forty years ago as being of very high quality.

Iowa Excelsior. (Lab. Vin.) Originated by Professor Mathews, of Iowa, about 1880. Clusters medium; berries large, red; high quality; ripens early; self-sterile.

Iris. (Lab. Vin.) A seedling of one of Rogers' hybrids; from C. Engle, Paw Paw, Michigan, about 1888. Vigorous; cluster large, long, compact; berry large, round, dark amber, thin bluish bloom; skin thin; pulp tough, slightly astringent, sweet, vinous, foxy; good.

Irvin October. (Bourq.) Originated on the Irvin farm in Guilford County, North

Carolina, about 1885. Vigorous but inclined to mildew; cluster large, long, tapering; berries medium in size, of dingy red color; sweet; good; very late.

Irving. (Vin. Lab.) A seedling of Catawba fertilized by Chasselas de Fontainbleau; from S. W. Underhill in 1868. Vigorous canes, short-jointed; clusters large, long, shouldered, not well filled; berry large, round, yellowish-green, thick bloom; skin thick, tough; flesh tender, melting; flavor vinous, sweet; very good; rots and mildews badly.

Ithaca. (Vin. Bourq. Lab.) *Parker; Tucker's Parker.* A seedling of Delaware fertilized by Chasselas Musque; from a Mr. Tucker, of Ithaca, New York, about 1868. Of moderate vigor; cluster large; berry large, pale green with amber tinge; skin thick; pulp tender, juicy, sweet; high quality.

Jacent. (Rip. Lab.) Noted by T. V. Munson in *Gardener's Monthly* for 1884, as undistinguishable from Bacchus, except that the saccharometer shows less sugar.

Jaeger's Seedlings. About forty years ago Hermann Jaeger, of Neosho, Missouri, became interested in the horticultural possibilities of the wild grapes of his neighborhood. He corresponded with Frederick Muench, of Marthasville, who encouraged him in his efforts. Beside selecting various vines from the woods he made crosses of species. His object was to secure more vigorous, productive and disease-resistant sorts than any of our standard varieties. He was particularly impressed with the Lincecumii or so-called Summer grapes of his section. His selections of this species are notable for their extreme vigor but many of them are susceptible to fungi and as they are all self-sterile they are uncertain bearers when removed from the wild male vines. His most promising seedlings are as follows:

No. 9. Productive; subject to black-rot; cluster large; berry below medium; juicy, sweet; good.

No. 12. Cluster and berry medium; sweet.

No. 13. Hardy, prolific; as large as Ives and of no better quality.

No. 17. Cluster large; berries medium; sweet; good.

No. 42. Cluster very large; berry medium; very sweet and juicy; good.

No. 43. (Linc.) One of Jaeger's selections from the woods. Rank grower; canes thick, numerous, glaucous; diaphragm thick; shoots glabrous, spiny; tendrils intermittent; leaves large, thick, glossy green, glaucous below, not lobed; cluster large; berry medium, oblate, black; ripens too late for this section. Does not ripen its wood well and is slightly tender and very susceptible to leaf-hopper here. Self-sterile.

No. 50. See Longworth.

No. 56. See Dufour.

No. 70. See Munson.

No. 72. (Linc. Rup.) A seedling of *No. 43* crossed with a male vine of *Vitis rupestris*. Bunch medium, very compact; berry size of Concord, black with pale bloom; sweet, of pure flavor; ripens with Norton.

No. 100. (Rip. Lab.) A seedling of Elvira. Vine shows Labrusca characters,

very hardy, productive; bunch and berry as large as Concord, yellowish with reddish tinge; quality and flavor similar to Catawba; cracks when ripe; season with Delaware.

James Seedling. (Lab. Vin.) From J. H. James, Urbana, Ohio. Resembles Catawba but is hardier and healthier.

Jane Wylie. (Rip. Vin. Lab.) *Janie Wylie.* A hybrid between Clinton and a foreign grape; from Dr. A. P. Wylie, Chester, South Carolina, about 1870. Vigorous, productive; bunch large, shouldered; berry large, globular to oval, dark red with thick bloom; pulp firm, meaty, juicy, sweet, rich, vinous; skin thick, tender; early.

Jelly. Exhibited before the American Pomological Society in 1856 and described by William G. Waring of Pennsylvania as "extremely productive, good; especially valuable for culinary use. Very good when dried."

Jemina. (Rip. Lab.) A seedling of Elvira crossed with an unknown variety; from D. S. Marvin, Watertown, New York, about 1891. Vigorous, hardy, healthy; bunch short, compact; berry medium, black, delicious; skin thin, liable to crack; much earlier than Elvira.

Jennie May. (Lab.) Mitzky, in 1893, states that this variety is a Concord seedling grown by John Laws, Geneva, New York. Apparently identical with Concord.

Jennings. (Lab.) A native grape from Lexington, Massachusetts, noted in *Magazine of Horticulture* for 1860. Hardy, productive, free from mildew; bunch medium; berries black; pulpy, foxy; ripens very early.

Jessie. (Lab. Bourq. Vin.) A seedling of a cross between Delaware and Diana; received by the *Gardener's Monthly* in 1879, from F. W. Loudon, Janesville, Wisconsin. Described as looking like Diana but of better flavor.

Jeter. (Rot.) Described in *South Carolina Station Bulletin No. 132.* Vigorous, very productive; bunches contain three to eight large, brownish-black berries; skin thick, very tough; pulp tender, juicy; quality good; ripens about August 25th.

Joen. Noted by Prince in *Gardener's Monthly* for 1863 as a worthless variety.

John Burr. (Lab.) Noted by Mitzky, in 1893, as "a Concord seedling grown by the late John Burr, of Leavenworth, Kansas."

Johnson. A South Carolina seedling. Mentioned in the American Pomological Society catalogs for 1875 and 1881.

Jolly. A Pennsylvania grape noted by Waring in 1851.

Joly. (Champ.) A wild vine of *Vitis champini* secured by Munson from Lampasas County, Texas. Stamens reflexed; cluster small; berry medium, black; ripens early.

Jonathan. Noted by S. J. Parker of Ithaca, New York, in the *United States Patent Office Report* for 1861 as a grape that "grew well and ripened its wood."

Joplin's Peaks of Otter. A native grape of the Blue Ridge Mountains, Virginia, from J. Joplin. Noted in *Gardener's Monthly* for 1869 as having been in cultivation for thirty-five years. Very vigorous, very productive, healthy; fine wine grape.

Jordan Large Blue. *Jordan's Blue.* Prince in 1830 states that this grape is an exotic but that a Mr. Smith of New Jersey believed it to be a native of New England. Bunches large; berries large, blue; flesh pulpy.

Joseph Henry. A seedling from D. J. Piper, Illinois; received first premium at the State Fair in Freeport, Illinois, in 1877, as the best new grape. Said to be very early and as of high quality as Delaware.

Judd. Noted in the *American Horticultural Annual* for 1871, as a seedling raised by P. Stewart of Mt. Lebanon, New York.

Judge. (Doan.) A wild male vine of *Vitis doaniana* secured by Munson from Greer County, Oklahoma.

Judge Miller. (Bourq. Lab.) A seedling of Herbemont crossed with Martha; from Munson. Described by the Georgia Experiment Station as moderately vigorous; stamens upright; bunch large, moderately compact; berries medium, greenish-yellow, of good quality; ripens a little earlier than Catawba.

July. C. E. Goodrich of Utica, New York, mentions this variety, in the *United States Patent Office Report* for 1853, as valuable because of ripening early.

July Twenty-fifth. (Rip. Lab.) According to Mitzky, 1893, this is an Elvira seedling; from Jacob Rommel, Morrison, Missouri.

Jumbo. (Lab.) *Big Concord.* Probably a Concord seedling; from Reuben Rose, Marlboro, New York. Vigorous, hardy, productive; bunches and berries vary in size from year to year; ripens a week earlier than Concord.

Juno. (Bourq. Lab.) A seedling of Delaware; from G. A. Ensenberger, Bloomington, Illinois, 1882. Vigorous and productive; cluster medium, sometimes shouldered; berry white, translucent with yellow tinge, round, medium; pulp tender; good.

Juno. (Vin. Lab.) *Uno.* A cross between Muscat Hamburg and Belvidere; from G. W. Campbell, Delaware, Ohio, about 1882. Rich and sweet.

Juno's Sister. (Vin. Lab.) The same origin and parentage as the preceding. Berry black, blue bloom; flesh meaty; seeds part readily; no acidity.

Kalamazoo. (Lab. Vin.) From a Mr. Dixon of Steubenville, Jefferson County, Ohio, about 1860, from seed of Catawba. Resembles Catawba closely but is larger in bunch and berry; not of as high quality and ripens ten days earlier.

Kalista. (Bourq. Lab.) A white-fruited seedling of Delaware produced by J. Sacksteder of Louisville, Kentucky. Resembles the parent except for the color of fruit and greater vigor of vine.

Kansas July. (Rip.?) A variety mentioned by Mead forty years ago as an early grape from Kansas with small bunches of very small sweet berries. Vine vigorous.

Kay Seedling. (Bourq.) A seedling of Herbemont from Kentucky.

Keller. *Dr. Keller.* Noted in *Gardener's Monthly* in 1863.

Keller White. (Lab. Vin.) Noted by Mitzky in 1893 as a seedling of Catawba inferior to the parent.

Kellog. (Lab.) A wild Labrusca from New Canaan, Connecticut, and described by Prince in 1830 as having large, purple, foxy fruit of oblate form.

Kemp. (Linc. Bourq.) A seedling of Post-oak crossed with Herbemont; from Munson in 1885. Stamens erect; cluster large; berry medium, dark red; ripens very late.

Kendall. (Lab. Vin.) A seedling of Isabella; from Brooklyn, New York, about 1865. Resembles Isabella very closely but larger in bunch and berry.

Kenena. (Linc. Rup.) A cross between Munson of America and a Post-oak hybrid, about 1898. Very vigorous; canes smooth, much branched; leaves rather small, deeply four- to seven-lobed; cluster above medium; berries small, purple, round, persistent; skin thin, tough; flesh tender, juicy; good; seeds small; ripens just before Herbemont.

Kenrick's Native. (Lab.) Noted by Prince in 1830 as a wild Labrusca found near Newton, Massachusetts. Fruit light green, oval.

Kentucky. (Aest. Lab.) A supposed seedling of Norton; found by James Childers of Auburn, Kentucky, in 1887. Very vigorous, hardy, healthy and productive; canes rather slender; tendrils continuous; leaves large; flowers self-sterile; clusters large, shouldered, tapering; berries small, oblate, purplish-black, persistent; moderately juicy, tough, mild, somewhat insipid, hardly fair in quality; seeds numerous, medium size to above; raphe a cord; ripens late.

Kentucky Wine. Mentioned by Prince in *Gardener's Monthly* for 1863.

Ketchum. Received by the United States Department of Agriculture about 1860 from an unknown source. Fruit described as black, sweet, pulpy, of medium size.

Keystone. (Lab.) A seedling of Concord; from John Kready, Mount Joy, Pennsylvania. Resembles Concord very closely but considered by some as of better quality and as a better keeper.

Kiamichi. (Lab. Vin. Bourq.) Parents, Delago crossed with Brilliant; from Munson, in 1899. Stamens reflexed; cluster medium; berry large, purple; ripens mid-season.

Kilvington. (Lab. Vin.) Bought by a Mr. Cassady of Philadelphia for an Isabella, in 1847. Grant considers it a seedling of Catawba which it resembles in every respect except that the berries are smaller, rounder and of a duller red.

King Philip. (Vin. Lab. Rip.) A second generation Vinifera-Labrusca-Riparia hybrid; produced by N. B. White of Norwood, Massachusetts, about ten years ago. Vine vigorous, resembling Labrusca; cluster large; berry large, roundish or slightly oval, purple; flesh solid, tender; flavor vinous, sweet; very good.

Kingsessing. (Lab. Vin.?) Of unknown origin, mentioned in 1866 by Husmann. Vine tender, subject to mildew and rot; cluster large, loose, shouldered; berries medium, round, pale red with lilac bloom; fair quality.

King William. One of Marine's seedlings, not disseminated.

Kinney's Seedlings. According to Mitzky, I. Kinney of Zanesville, Ohio, has produced two seedlings as follows:

Kinney No. 1. (Lab. Vin.) A seedling of Vergennes. "Bunch medium to large, compact; berries large, round; skin tough; very fine flavor; good keeper; ripens early."

Kinney No. 2. (Lab.) A seedling of Concord. "Bunch medium, compact; berries small, round, white, transparent, but few seeds, very sweet, without any disagreeable taste; leaf similar to Concord; healthy; good grower."

Kiowa. (Linc. Bourq.) A seedling of *Jaeger No. 43* crossed with Herbemont; from Munson, in 1898. Described by him as follows: "Growth very strong and healthy, much branched, leaves small to medium, 5 to 7 lobed; cluster medium to large, with long peduncle; berry small to medium, nearly black, round; skin thin, tough; flesh tender, juicy, sprightly, agreeable quality; ripens just before Herbemont."

Kitchen. (Rip.) A seedling of Franklin, about 1865. Cluster medium; berry medium to small, round, black; skin thin, tough; flesh tender; very late.

Knob Mountain. A variety mentioned in 1869 by the United States Department of Agriculture as under trial.

Kosomo. (Lab. Linc. Vin. Bourq.) A seedling of Delago crossed with Beacon; from Munson in 1899. Stamens reflexed; cluster large; berry large, purple; ripens mid-season.

Kramer Seedling. (Lab.) A seedling of Concord; from J. C. Kramer, of La Crescent, Minnesota. Vine resembles Concord but not thrifty; fruit resembles Concord but is sweet and with a spicy flavor.

Krause. (Bourq. Lab. Vin.) A second generation Herbemont-Niagara cross; from Munson, in 1908. Munson says, "Vine vigorous, usually healthy, very prolific; clusters large, handsome; berries medium size, pearly white, fine quality; promising for Southwest."

Kruger. (Linc. Rup. Lab. Vin.) Parents, America by R. W. Munson; from Munson, in 1899. Stamens erect; cluster very large; berry medium, black; ripens late.

Labe. An accidental seedling from Lebanon, Pennsylvania, about 1850. Vigorous, hardy; bunch small, short, loose; berry black; flesh tender, sweet.

Lacon. (Lab.) A seedling of Concord from D. H. Wier, Lacon, Illinois, about 1862. Medium in vigor, hardy; bunch small; berry medium, black; Concord flavor.

Laconia. (Lab. Vin.) From Jos. N. Sanborn, Laconia, New Hampshire. Received at this Station in 1903 for testing but has not fruited. Rather weak grower; self-sterile.

La Crissa. (Bourq. Lab.) *Sacrissa; Saccharissa.* A Delaware seedling; from J. Sacksteder, Louisville, Kentucky. Vigorous; berry small, white; good.

Ladies. (Lab.) Mentioned by Downing in 1845 as a fox grape with a strong scent, harsh flavor and of no value for dessert.

Lady Charlotte. (Lab. Bourq. Vin.) A seedling of Delaware crossed with Iona; from C. G. Pringle of Vermont, 1869. Vigorous; bunch large, shouldered, compact; berry medium, round, light green to golden; juicy, sweet; good.

Lady Dunlap. (Lab. Vin.) *Dunlap?* From J. H. Ricketts, about 1875. Bunch medium, compact; berry medium, amber; vinous; good.

Lady Helene. From Fred Roenbeck, Bergen, New Jersey. Vigorous; cluster large, shouldered, compact; berry large, white; good.

Lady Younglove. (Lab. Rip.) A cross between Missouri Riesling and Perkins; from John Sacksteder, Leavenworth, Indiana. Vigorous, hardy; cluster medium, generally shouldered; berry large, oval, light red.

Lake. *Iden.* Exhibited by Nicholas Longworth in 1852. Bunch and berry small, black; acid, harsh; early.

La Marie. (Lab.) A seedling of Willie; from L. C. Chisholm. Vigorous, hardy; bunch large, shouldered; berry large, very foxy, color "ashes of roses."

La Reine. (Linc. Rup. Lab.) A seedling of America by Beacon; from Munson in 1899. Stamens erect; cluster large; berry large, black; ripens mid-season.

Large Berry. (Long.) A wild vine of *Vitis longii* secured by Munson from Motley County, Texas. Stamens reflexed; cluster small; berry medium, black; ripens early.

Large Leaf. (Long.) Like the preceding, this is one of Munson's varieties, a wild form of *Vitis longii* from Motley County, Texas. Stamens depressed; cluster small; berry small, black; ripens early.

La Salle. (Rip. Linc. Rot.) A Scuppernong crossed with a Post-oak hybrid; from Munson. Vigorous and comparatively hardy; stamens depressed; cluster medium, ovate, short; berries large to very large, black with white specks; juicy; "better than Scuppernong."

Laughlin. (Lab.? Bourq.? Vin.?) A chance seedling, probably of Concord crossed with Delaware; from W. R. Laughlin, College Springs, Iowa. Hardy; cluster large, compact, shouldered; berries medium, white; skin tender; sweet, vinous, high quality; early.

Laura. (Lab.) From H. B. Lum, Sandusky, Ohio, 1867. Hardy, productive; berry large, pale red; sweet, somewhat foxy.

Laura. (Bourq. Lab. Aest. Vin.) *Lama; Watertown.* A cross of Eumelan with Delaware; from D. S. Marvin, Watertown, New York, about 1880. Medium in vigor; bunch small, shouldered; berry small, dark purple; skin thin, tough; pulp tender, juicy; hardly good.

Laussel. (Linc. Lab. Aest.) A seedling of a Post-oak crossed by Gold Coin; from Munson. Vigorous, hardy; cluster medium, moderately compact; berry medium, round, dark purple or black; skin thin; pulp firm; good.

Lavega. (Lab. Vin.) A hybrid seedling; from W. H. Mills, Hamilton, Ontario. Hardy; bunch medium; berry large, reddish; vinous; very good.

Lawrence. (Lab.) Found growing wild by Dr. R. B. Black, Fay, Pennsylvania, about 1880. Very vigorous; cluster large, conical, compact; berry medium to large, round, dark purple to black; sub-acid; quality poor.

Lawson. (Lab.) From E. W. Bull, Massachusetts; first exhibited before the Massachusetts Horticultural Society in 1874. Bunch large; berry large, white.

Leader. (Lab. Vin.?) A chance seedling of unknown parentage; from the Storrs and Harrison Company, Painesville, Ohio, about 1893. Variable in vigor and productiveness; flowers semi-fertile; tendrils continuous; clusters not uniform, medium to short, shouldered; berries medium, roundish, light green changing to yellowish; skin thin, tender; flesh tender, vinous; good to very good.

Leavenworth. (Lab. Vin.) *Burr No. 47.* A seedling of Concord; from Francis Godard of Leavenworth, Kansas, about 1888. Weak, hardy, medium in productiveness; tendrils continuous; flowers fertile or nearly so; cluster small, short, moderately compact; berries small, slightly oval, dull green; flesh tender and soft; fair in quality.

Lehman. (Lab. Vin.) From William Lehman, New Lebanon, Pennsylvania; parentage, Bland crossed with Isabella. Bunch and berry large, nearly white; late.

Lenori. *Alvey's Lenori.* Noted in the *United States Patent Office Report* of 1861.

Leon. (Vin. Lab.?) From William H. Marine. Bunch medium; berry large, oval, pale red.

Letovey. (Linc. Lab.? Vin.) From Munson. Very vigorous; shybearer; stamens reflexed; cluster large, compact; berry small, round, deep purple to black; pleasant flavor; quality medium.

Lewis. Noted in the *Illinois Horticultural Society Report* for 1881 as productive, healthy, early; berry black; fair quality.

Lexington. (Lab.) A Concord seedling; from T. B. Miner, New Jersey. Hardy, not productive; bunch large; berry medium to large, black; quality medium.

Lida. A chance seedling from Ludwig Heneke, Collinsville, Illinois. Bunch and berry medium, red; sweet, not foxy; mid-season.

Lightfoot's Seedlings. W. H. Lightfoot, of Springfield, Illinois, has raised a large number of seedlings from standard varieties, such as Concord, Northern Muscadine, Goethe and others. Of his named seedlings there are Alice Lee, Amy, Benjamin, Capital, Lightfoot, Miriam, Sangamon and Springfield.

Lightfoot. (Lab. Vin.) A seedling of Niagara; from W. H. Lightfoot, Springfield, Illinois. Vigorous, healthy; stamens upright; leaves three- to five-lobed; cluster medium, shouldered, loose; berry medium, round, light green to yellowish; flesh melting, juicy, sweet; good; keeps well; ripens after Concord.

Lightfoot Seedling No. 34. (Lab. Vin.) A seedling of Lady Washington; from W. H. Lightfoot, Springfield, Illinois. Vigorous and healthy; bunch large, compact; berries large, round, black; juicy and sweet.

Limington White. (Lab.) Described by Cole in 1849. Hardy; bunch and berry large; good.

Linceola. (Linc. Rip. Lab.) A cross between a Lincecumii and Elvira credited to Munson but not cataloged by him. Vigorous, shy bearer.

Lincoln. *Hart; McLean.* A southern grape found growing in the Catawba River in North Carolina, by Dr. Wm. McLean, about 1800. Vigorous, hardy, early; berry small, round; skin thin, dark purple with light bloom; flesh tender, juicy, sweet, rich, vinous. Resembles Devereaux, and by some considered identical.

Lincoln. (Lab. Vin.) *Lincoln County; Read's Hybrid.* A seedling of Concord crossed with Black Hamburg; from Wm. H. Read, Port Dalhousie, Ontario. Vigorous, hardy, productive; cluster below medium, compact, cylindrical, shouldered; berry below medium, round, black; skin thick, tough; pulp firm but breaking, sweet, sprightly, slightly foxy; good; ripens with Concord.

Lincoln Downer. (Lab.) Listed in the *United States Patent Office Reports* of 1859–61 as being under test. Vigorous.

Linerup. (Linc. Rup.) From Texas. Vigorous; productive; stamens reflexed; bunch large, medium in compactness; berry small, black; medium in quality.

Lincy. (Linc.) From Texas. Vigorous; stamens upright; cluster large, compact; berry medium, black; quality medium.

Lindell. (Lab. Vin. Bourq.) A seedling of Lindley crossed with Delaware; from T. V. Munson.

Linden. (Lab.) A Concord seedling; from T. B. Miner, Linden, New Jersey. Hardy; bunch and berry large, black, firm.

Linherbe. (Bourq. Lab. Vin.) A seedling of Lindley crossed with Herbemont; from Munson. Vigorous; cluster medium, conical; berry small, red, translucent; flavor sweet; quality medium.

Lindmar. (Lab. Vin.) A seedling of Lindley crossed with Martha; from Munson. Vigorous, not always hardy, variable in productiveness; tendrils continuous; flowers partly fertile; stamens upright; cluster small, compact; berries small, oval, dull, pale green, thin gray bloom; flesh pale green, slightly vinous, foxy; good.

Linelvi. (Rip. Lab. Vin.) *Munson No. 45.* From Munson; parentage given as Lindley by Humboldt, or Lindley by Elvira. So lacking in vigor as to be unpromising.

Linley. (Lab. Rip. Vin. Bourq.) Parentage, Rommel crossed with Delaware; from Munson in 1897. Stamens erect; cluster medium; berry medium, yellow; ripens early.

Linn. (Lab.) From P. B. Crandall, Ithaca, New York, about 1890. Vigorous; tendrils continuous; cluster medium, compact, shouldered; berry medium, round, yellowish-green with reddish dots; pulp fibrous, foxy and acid; good.

Linn Queen. (Lab.) Vigorous; cluster medium, compact; berry large, black, poor; stamens upright.

Little Blue. (Lab. Vin. Aest.) From A. J. Caywood, Marlboro, New York, about 1888. Vigorous, medium in productiveness; tendrils intermittent to rarely continuous; diaphragm thick; flowers partly fertile; stamens upright; cluster medium, shouldered; berry medium, oblong, black; pulp juicy, sweet, good; ripens after Concord.

Little Giant. (Lab. Vin.) Noted as under test in the vineyards of the United States Department of Agriculture from 1863 to 1866. Resembles Isabella very closely.

Little Ozark. Hardy; bunch long, loose; berry medium, black; juicy; good.

Livingston. (Lab. Vin.) From John C. Wheaton, Dansville, Livingston County, New York; believed to be a seedling of Wilder or Aminia. Vigorous, not always hardy, productive: tendrils continuous; leaves large, dull green; flowers nearly self-fertile; stamens upright; cluster large, long, frequently loosely single-shouldered, very compact; berries medium, roundish, black with blue bloom, persistent; skin thin, tender; flesh tender, faintly spicy; good; characters of vine and fruit indicate Labrusca and Vinifera.

Lizzie. (Lab.) A seedling from E. W. Bull, exhibited by him before the Massachusetts Horticultural Society in 1874. Bunch and berry large, white.

Lobata. (Linc. Lab.) A seedling of Munson crossed with Profusion; from Munson in 1897. Stamens depressed; cluster large; berry medium, black; ripens late.

Logan. (Lab. Vin.) *David Hall Grape; Purple Urbana; Urbana.* A seedling of unknown parentage, brought to notice by Dr. Thompson; supposed to have come from Logan County, Ohio. Medium in vigor, usually hardy; cluster medium, compact, shouldered; berries large, oval, dark purple to black; sweet, juicy; good.

Logan. *Alvey's Logan.* Mentioned by Dr. G. P. Morris, Wilmington, Delaware, in *United States Patent Office Report*, 1861, as a hardy grape.

Long. (Bourq.) *Madison County.* Found by Col. James Long on his plantation near Danielsville, Madison County, Georgia, about 1827. Vigorous; cluster medium to large, compact, shouldered; berries small, dark purple with thin bloom; pulp tender, sweet, vinous; good; ripens late. Considered by some synonymous with Cunningham.

Long John. (Linc. Lab. Vin.) Parents, Big Berry crossed with Triumph; from Munson. Vigorous, not hardy here; cluster large, long, cylindrical to tapering, compact; berry large, roundish, black; skin thin, tough; texture tough and coarse; flavor tart, slightly acid at center; good; ripens very late.

Longworth. (Bourq.) *Longworth No. 20.* Found in the garden of Nicholas Longworth, Cincinnati, Ohio, about 1867. Healthy, vigorous, productive; clusters large, shouldered; berry small, round, black, juicy, refreshing; of the Herbemont type but ripens earlier.

Longworth. (Linc. Bourq.) *Jaeger No. 50.* A seedling of *Jaeger No. 43* crossed with Herbemont; from Hermann Jaeger, Neosho, Missouri, about 1880. Susceptible to mildew; bunches large; berries medium, blue-black; good; very late.

Longworth Monster. From Ohio. Vigorous, healthy, productive; bunch medium; berry large, round, blue.

Loomis' Honey. (Lab.) Exhibited in 1863 by Peter Raabe of Philadelphia, in New York at the New York Fruit Growers' meeting. Hardy; clusters large; berries large, black; sweet.

Looney Seedling. (Lab.) From C. S. Looney, Cowan, Tennessee, about 1902. Cluster small, shouldered, blunt at end, loose; berry large, round, thick blue bloom over black; skin thin, tender; sweet, slightly foxy; good; ripens early. Resembles Concord.

Lorain. From Lorain, Ohio, about 1865. Cluster medium; berry large, amber-yellow; sweet; good.

Loretto. (Lab.) *Queen Loretto.* From Tennessee. Berry medium, round, white; good; mid-season.

Loudon Seedling. (Lab. Vin. Bourq.) A seedling of Delaware and Diana; from F. W. Loudon, Janesville, Wisconsin. Resembles Diana in bunch, berry and flavor.

Louisa. (Lab. Vin.) Grown by Samuel Miller, Calmdale, Pennsylvania. Vigorous, hardy; cluster compact, occasionally shouldered; berry round, oval, black with blue bloom; flavor resembles Isabella; ripens early.

Louise. (Lab. Vin.) Given by Mitzky as a seedling from New Jersey. Vigorous; bunch large, compact; berries large, white; juicy, sweet; very good.

Louisville. Noted in a list of supposed hardy grapes in *United States Department of Agriculture Report* for 1863.

Lowell Globe. Noted in a list of worthless varieties in *Gardener's Monthly* in 1863.

Lucky. (Linc.) An undescribed variety used by Munson as a parent in a number of crosses.

Lucy Winton. Noted in the *Gardener's Month'y* for 1861 as being equal in quality to Isabella and four weeks earlier.

Luders. (Rip.) A wild male vine of *Vitis riparia* secured from near Madison, Wisconsin, by Munson.

Luffborough. (Lab. Vin.?) Found near Georgetown, District of Columbia, before 1828. Berries large, deep purple; juice sweet, foxy. Recommended by John Adlum for wine and cited in a list of worthless varieties in *Gardener's Monthly*, 1863.

Lugawana. Noted in the *Ontario Fruit Growers' Association Report* for 1887 in a list of varieties ripening late.

Lukfata. (Champ. Lab.) A seedling of Moore Early crossed with *Vitis champini;* from Munson. Vigorous, hardy; cluster medium, ovate, compact; berries globular, large, black, persistent; juicy, very sweet and agreeable; good; early; stamens reflexed.

Luckyne. (Linc. Bourq.) Parents, Lucky crossed with Sweety; from Munson in 1897. Stamens erect; cluster large; berry medium, black; ripens late.

Lulie. (Lab. Vin.) A seedling of Telegraph crossed with Black Hamburg; from C. J. Copley, Stapleton, New York. Hardy, healthy and productive; cluster large; berry very large, black with a fine bloom; good. Awarded a medal at the World's Fair, Chicago, 1893.

Luna. (Lab.) From William M. Marine. A large, hardy, white grape.

Lycoming. (Lab. Vin.) From a Mr. Evenden, Williamsport, Lycoming County, Pennsylvania, about 1860. Hardy; canes short-jointed; cluster large; berry large, oval, light red.

Lydia. (Lab. Vin.) A chance seedling from Charles Carpenter, Kelleys Island, Ohio. Cluster short, compact; berries large, oval, greenish-white; skin thick; pulp tender, sweet, slightly vinous; good; ripens with Delaware.

Lyman. (Rip.) A northern variety said to have been brought from Quebec more than fifty years ago. Hardy; productive, vigorous; cluster large, handsome, compact; berry medium, round, black with thick bloom; juicy; good.

Lyon. (Lab. Bourq. Vin.) *Chidester No. 1; Pres. Lyon.* A seedling of Concord crossed with Delaware; from C. P. Chidester, Battle Creek, Michigan, named in honor of T. T. Lyon of Michigan about 1890. Vigorous, productive; cluster medium to large, cylindrical, shouldered, medium compact; berries large, round, white, whitish bloom; pulp tender, sweet, rich, vinous; very good.

Mabel. (Lab. Bourq. Vin.) Originated by A. J. Caywood of Marlboro, New York, from seed of Walter. Moderately vigorous, not always hardy, inclined to mildew, productive; canes medium size with thin blue bloom; tendrils intermittent; leaves medium size, thin, slightly pubescent; flowers fertile; clusters large, usually shouldered; berries large, round, black; skin thin, rather tough, inclined to crack, purplish pigment; flesh tender, juicy, sweet, vinous; good; ripens before Concord but not a good keeper.

McDonald's Ann Arbor. (Lab.) Noted in the *American Pomological Society Report* for 1881. Berry very large, black with blue bloom; quality of Concord; ripens with Worden.

Macedonia. (Lab.) *Miller's No. 3.* An early white seedling of Concord; raised by Samuel Miller of Calmdale, Pennsylvania, over fifty years ago. Said to resemble Martha but not so vigorous.

McKinley. (Lab. Vin.) Originated by Frank L. Young, Lockport, New York, from seed of Niagara pollinated by Moore Early, planted in 1891. Not vigorous, usually hardy, moderately productive; tendrils continuous; leaves of medium size; clusters medium to large, usually single-shouldered, compact; berries large, oval, light green; skin tender; flesh tender, juicy, sweet; good; resembles Niagara but about ten days earlier.

McNeil. (Lab.? Rip.?) A variety resembling Clinton, cultivated in the Champlain region from fifty to seventy-five years ago.

Madeira. The name Madeira is common in the early grape literature of the country. Its use was begun at the time when many of the cultivated sorts were supposed to be of foreign origin. The significance of the word when found unqualified depends somewhat on the time and place. Thus, in the South, Madeira usually means Herbemont's Madeira; in Ohio, Ives Madeira and in Pennsylvania, York Madeira.

Madeline. (Lab.) Given by Mitzky, in 1893, as a chance seedling grown by G. Henderson, Eddyville, New York. Bunch medium to large, compact, often shouldered;

berry large, round, greenish-white with a white bloom; skin medium thin but tough, translucent; sweet, juicy, with a pleasant flavor; ripens early.

Magee. Given by Mitzky as the name of the variety described in this work as Glenfeld.

Magnificent. (Lab.? Vin.?) From A. F. Rice, Griswoldville, Georgia, about twenty-five years ago. Cluster large, broad, shouldered, loose; berries large; skin thin, tender; flesh tender, juicy, sweet; very good.

Maguire. (Lab.) This variety was known about fifty years ago as a very early black sweet grape of fair quality which originated at Lansingburg, New York. Similar to Hartford but more foxy.

Mahogany Colored. (Lab.) *Mahogany.* A wild Labrusca introduced over fifty years ago by G. W. Clark, of Malden, Massachusetts. Fruit of the Labrusca type; mahogany-red.

Main. (Lab.) Mentioned in the horticultural periodicals of fifty years ago as a variety very similar to Concord and thought by many to be the same; from a Mr. Main, of Concord, New Hampshire, about 1854. Said to be about ten days earlier than Concord.

Malinda. An early white variety mentioned in *Gardener's Monthly* in 1869.

Malvin. One of Marine's seedlings, described as black, of good quality and with cluster and berry of medium size.

Manhattan. An amber-green seedling of Isabella which originated on Long Island about 1850. Unproductive; cluster small, compact; berry medium; flesh tough, foxy; good; ripens late; shatters.

Manockanock. Listed by Prince in *Gardener's Monthly* in 1863 as worthless.

Mansfield. (Lab. Vin.) A seedling of Concord fertilized by Iona; raised in 1869 by C. G. Pringle of Charlotte, Vermont. Very vigorous; leaves large, thick, very pubescent below; cluster large, shouldered, compact; berry large, slightly oval, black; flesh tender; very good; ripens before Concord.

Manson. A cross between R. W. Munson and Gold Coin; produced by Munson in 1899 and introduced in 1906. Munson says: "Vigorous and productive; clusters large; berry above medium, of yellow color; skin thin and tough; pulp tender; quality excellent; ripens late, with Triumph."

Marguerite. (Lab. Vin.) A Labrusca-Vinifera variety; from Theophile Huber, Illinois City, Illinois. Vigorous, not productive; stamens upright; cluster small, loose; berries medium, light amber; tender, sweet, vinous; good; ripens a week after Concord.

Marguerite. (Linc. Bourq.) Originated by Munson; from Post-oak No. 2 fertilized by Herbemont. Very vigorous, very productive; shoots spiny, not downy; leaves medium to large, three- to five-lobed; stamens upright; clusters medium, cylindrical, shouldered, compact; berries large, round, dark purple; skin thin, tough; flesh tender; good; ripens ten days later than Catawba.

Marine's Seedlings. A number of varieties were produced by Wm. M. Marine about 1870. They were all crosses of native sorts produced by putting the pollen in water and then applying the water to the stigma of the sort to be fertilized. Of the varieties thus produced are Nerluton, Greencastle, Leon, Lucas, Mianna, Malvin, Olympia, King William, Minnie, Harriet Beecher, U. B., Uncle Tom, Red Jacket, and many others.

Mariole. *Joe's Mariole.* Mentioned by R. O. Thompson, of Nursery Hill, Nebraska, in the *United States Department of Agriculture Report* for 1866.

Marique. Warder, in 1867, says, "Ohio. Healthy, vigorous, very productive; bunch full medium, compact; berry oval, large, blue; spicy; very good."

Marker. Listed by the Superintendent of the Experimental Garden of the United States Department of Agriculture in the report for 1863.

Marsala. (Lab.) A dark red grape introduced about thirty years ago by Dr. Stayman. Cluster large; berry large; foxy, somewhat solid, tough; good; very resistant to rot.

Marvin's Seedlings. D. S. Marvin, Watertown, New York, grew many crosses of American varieties, few if any having been made by him with Vinifera. His best known grapes are Cayuga, Centennial, Hopican, Rutland and Shelby. Besides these he produced others, many of which were never named nor disseminated. One of these which was received at this Station in 1892 was described in the *Thirteenth Annual Report* under the name Marvin's Seedling. Clusters medium, compact; berry small, pale green or yellow; flesh firm, sweet, vinous; good; season last of September.

Marvina. (Lab. Vin. Bourq. Aest.) A seedling of Laura by Brilliant; from Munson in 1897. Stamens erect; cluster large; berry medium, white; ripens early.

Mary. (Lab. Vin.) A chance seedling of Catawba found in 1849 in the garden of Datus Kelley, Kelleys Island, Ohio. Vigorous, hardy; leaf medium, light-colored, downy beneath; cluster large, loose; berry medium, round, greenish-white, gray bloom, translucent; flesh tender, juicy, sweet, sprightly; very good; ripens with Catawba; mildews badly.

Mary. (Lab. Vin.) A seedling of Catawba introduced by a Mr. Hasselkus, of Griffin, Georgia, about 1885. Resembles Lindley very closely but is said to be more vigorous with larger and rounder berries of a lighter red and shorter, more compact clusters; ripens with Concord.

Mary Ann. (Lab. Vin.) *North Carolina Muscadine.* Originated by J. B. Garber, Columbia, Pennsylvania, about 1850. Vigorous and productive; cluster medium, compact, shouldered; berry medium, oval, black, foxy, poor; resembles Isabella; ripens with Hartford.

Mary Favorite. From J. T. Coffin, of Westland, Hancock County, Indiana, in 1889; a chance seedling found growing near a trellis on which Delaware and one of Rogers' hybrids were growing. Vigorous, usually hardy, variable in productiveness; canes long; tendrils continuous; leaves large, lower surface grayish-white, pubescent; flowers fertile,

open early; clusters medium to small, usually shouldered, very compact; berries small, roundish, purplish-black, persistent; skin thin, tough; flesh tough, slightly vinous, sweet, tart at center; good to best.

Mary Mark. (Bourq. Lab. Vin.) A seedling of Delaware; from Dr. Stayman. Lacks vigor, hardy, apparently healthy, productive; berry medium, red; flesh tender, juicy, vinous, sweet; very good; ripens with its parent which it closely resembles.

Mary Wylie. (Vin. Rip. Lab.) A hybrid of Clinton and Red Frontignan; from Dr. A. P. Wylie, Chester, South Carolina. Cluster large, loose; berry above medium, yellowish-green; flesh tender, juicy, vinous, delicate; very good; ripens late.

Maryland Purple. Mentioned by Prince in 1830 as a seedling from the woods of Maryland. Berries medium, purple, sweet and juicy; ripens very late.

Mason. A chance seedling of 1881; from Mrs. E. Mason, Lamont, Ottawa County, Michigan. Vigorous; clusters medium, sometimes shouldered, compact; berries large, round, reddish-amber; flesh tender, sweet, vinous, sprightly, slightly foxy; good; ripens just before Worden.

Mason. (Lab.) *Mason's Seedling.* A white Concord seedling raised by B. Mason, of Mascoutah, Illinois, about thirty years ago. Moderately vigorous, unproductive; cluster small, compact; berry large, round, light yellowish-green; skin thin; flesh tender, juicy, sweet, sprightly, slightly foxy; ripens a few days before Concord; very persistent; self-fertile.

Mason Renting. (Lab.) Described in *Bulletin 10*, 1890, Alabama Experiment Station. Vigorous, productive; clusters small, compact; berries small, greenish-yellow; good; ripens with Catawba.

Massachusetts White. (Lab.) A red foxy Labrusca, apparently a wild grape sent out by B. M. Watson, of Plymouth, Massachusetts, about 1860. Utterly worthless and name a misnomer.

Matchless. (Lab. Vin. Bourq.?) Originated by John Burr, of Leavenworth, Kansas, about 1887. Vigorous, hardy; black with heavy bloom; skin thin, tough; flesh tender, sprightly, vinous; very good; ripens with Brighton and hangs well for some time.

Mathilde. (Bourq. Lab. Vin.) Originated by G. A. Ensenberger, Bloomington, Illinois, from seed of Delaware. Vigorous, productive, not quite hardy; cluster large, very compact; berry small to large, round, dark red with lilac bloom; small ones seedless; flesh tender, juicy, vinous; good; very late.

Mauston. (Rip.) A wild vine of *Vitis riparia* secured by Munson from near Mauston, Wisconsin. Stamens reflexed; cluster small; berry small, black; ripens early.

May Red. Mentioned in the *Report of the Ontario Fruit Growers' Association* for 1887 as ripening with Janesville.

Mead Seedling. (Lab. Vin.) Found in 1847 in the garden of John Mead, Lowell, Massachusetts. A supposed seedling of Catawba which it strongly resembles but darker and with round berries.

Meanko. (Lab. Vin. Bourq.) Parentage, Delago crossed with Brilliant, from Munson, in 1899. Stamens erect; cluster medium; berry large, red; ripens mid-season.

Medora. (Bourq. Vin.? Lab.?) A seedling of Lenoir, probably pollinated by Croton; raised by Dr. Thos. R. Cooke, Victoria, Texas. Moderately vigorous; leaf resembles Lenoir; clusters large; berries pale green, medium, round, very translucent; sprightly, vinous; good.

Melasko. (Lab. Vin. Bourq.) A seedling of Delago by Governor Ireland; from Munson in 1899. Stamens erect; cluster large; berry large, black; ripens mid-season.

Memory. (Rot.) Vigorous, very productive, tender; cluster small, containing four to twelve large, round, brownish-black berries; skin thick; flesh tender, juicy, sweet; good to best; ripens early for a Rotundifolia.

Mendota. (Lab. Vin.) Originated about 1883 by John Burr, of Leavenworth, Kansas, from mixed seed. Not vigorous nor productive; leaves round, pale green; stamens upright; cluster small, very compact; berry above medium, round, black; skin tender; flesh tender, melting, sprightly, sweet; good; ripens just before Brighton.

Meno. (Lab. Vin.) Mentioned in *Bulletin 10*, 1890, Alabama Experiment Station. Clusters small and compact; berries medium size, amber; good; ripens with Catawba; rots and mildews.

Merceron. (Lab. Vin.) A somewhat recent seedling of Catawba and so similar as to be difficult to distinguish from it.

Merceron. (Lab. Vin.) From F. E. Merceron, Catawissa, Pennsylvania, about 1893; said to be a cross of Wilder and Concord. Cluster large, heavily shouldered; berries large, black; sweet, sprightly; very late.

Mericadel. (Linc. Rup. Lab. Bourq. Vin.) A seedling of America crossed with Delaware; from Munson, in 1898. Very vigorous, very productive; cluster large, berry medium, purple, very persistent; skin thin and tough; flesh tender, sweet; very good; ripens just after Concord.

Meta. According to Mitzky, a seedling of Jewel produced by Mr. L. Hencke, of Illinois. Bunch large, compact, shouldered; berry large, red; sweet and juicy; good; ripens before Concord.

Metis. (Lab. Vin.) A seedling of Salem; from C. Engle, of Paw Paw, Michigan. Cluster small, not compact, sometimes shouldered; berry large, dark red, gray bloom; skin thick; flesh rather tough, juicy, vinous; good.

Metternich. (Rip. Lab. Vin. Bourq.) *Metterny.* A seedling of Clinton fertilized by Poughkeepsie; from A. J. Caywood, Marlboro, New York. Moderately vigorous; cluster medium, long, cylindrical, sometimes shouldered, compact; berry small, roundish or slightly oval; skin thin, tough, light green to medium dark red; flesh tender, not very sweet, fine flavor; good; ripens late.

Mianna or **Mienna.** One of Marine's seedlings which some call a white grape and others black.

Michigan. (Lab. Vin.) A seedling of Salem from C. Engle, Paw Paw, Michigan. Vigorous, hardy and productive; cluster large, compact, usually shouldered; berry above medium, light green; good; ripens with Concord. There was another sort named Michigan or Michigan Seedling about fifty years ago which was said to resemble Catawba but about two weeks earlier.

Middlesex. (Lab.) One of E. W. Bull's seedlings. Apparently never disseminated.

Miland. Described in *Alabama Station Bulletin No. 29*, 1891, as a vigorous, not very healthy vine with medium-sized amber berries.

Miles. (Rip. Lab.) *Matlock.* From West Goshen Township, Chester County, Pennsylvania, over sixty years ago. Vigorous, productive, very early but does not keep; better than Hartford.

Millardet. (Berland.) From Llano County, Texas. Moderately vigorous, productive; stamens reflexed; cluster large; berry small, black; good; ripens late.

Miller. (Cord. Vin.) Mentioned by John Craig in the *Canadian Horticulturist* as a new grape, "a very happy combination of the European *V. vinifera* and the American *V. cordifolia.* It also keeps excellently."

Miller. (Bourq. Lab.) A seedling of Herbemont by Martha; from Munson. Stamens erect; cluster large; berry medium, white; ripens late.

Miller's Seedlings. Samuel Miller, during his early life a resident of Calmdale, Pennsylvania, later of Bluffton, Missouri, was one of the well known grape-breeders of the last century. He started this work about the time of the introduction of Concord and continued it until his death in 1901. Miller was an advocate of close breeding rather than cross-breeding as a means of improving fruit. His best known grape productions are: Black Hawk, Eva, Macedonia, Martha and Young America. Martha is the best known of these and this has been superseded. At the time of Miller's death he was engaged in improving the native persimmon.

Millington. (Lab.) Tested by the Michigan Experiment Station and reported in 1899 as being fairly vigorous, variable in productiveness; clusters large, roundish, moderately compact; berries large, round, black with blue bloom; flesh tender, very light green, sprightly, sweet, vinous, with a perceptible aroma; fair to good; ripens mid-season.

Millington White. (Rip.) Mentioned by Prince in 1830 as having been found growing north of the Missouri River, in Missouri, by Dr. Millington of that state. "Fruit of good size, very juicy, rather tart, the skin is thin and each berry generally contains three seeds."

Mineola. (Lab. Vin.) A cross between a seedling of Telegraph and Chasselas Musque; from C. J. Copley, Stapleton, New York. Of medium vigor, healthy, hardy and productive; bunches medium, cylindrical, compact, seldom shouldered; berries large, roundish, white or pale yellow, transparent, no pulp; very rich, pure, Muscat flavor; ripens very early.

Miner's Seedlings. About forty years ago, T. B. Miner, of Linden, Union County, New Jersey, raised 1500 seedlings of Concord in central New York. In 1879 after Miner's death, twelve of these seedlings were named and sent out for testing. They are Adeline, Antoinette, Augusta, Belinda, Boadicea, Carlotta, Eugenia, Ida, Lexington, Linden, Rockingham and Victoria. None of these is of great value and they are chiefly of interest as indicating what may be expected from Concord seedlings.

Mingo. Mentioned by Samuel Miller in 1895 as being among the newer varieties; bunch and berry small, black; ripens before any other; makes a heavy dark wine.

Minnehaha. (Vin. Lab.) Said to be a cross between Muscat of Alexandria and Massasoit; from Marshall P. Wilder. Vigorous, productive, not hardy; bunch large, very long, variable in compactness, shouldered; berry medium, very sweet, vinous, "of the most delicious quality." Said by some to be Croton.

Minnesota. (Rip.) A wild vine of *Vitis riparia*, secured by Munson from near Carver, Minnesota. Stamens reflexed; cluster small; berry very small, white; ripens very early.

Minnesota Mammoth. (Lab.) Introduced by L. W. Stratton, Excelsior, Minnesota, about 1879. Vigorous, hardy and productive; bunch and berry large, dark red; skin thick; characteristic spicy flavor, sweet; poor.

Minnie. From William M. Marine. Bunch small; berry medium, dark red; sweet; nearly equal to Delaware.

Miriam. (Lab. Vin.) A seedling of Lady Washington; from W. H. Lightfoot, Springfield, Illinois. Very vigorous, hardy, healthy; bunch large, compact, shouldered; berries large, black, juicy and sweet; of superior quality; ripens two weeks later than Concord.

Mish. (Rot.) *Meisch.* Origin in North Carolina. Vine vigorous, very productive; bunches contain from six to fifteen medium-sized, reddish-black oval berries with thin skin; tender and sweet; very good; self-sterile.

Mission. (Vin. Gird.?) *El Paso.* The exact origin of Mission is unknown but it is believed to have originated in the remote Missions of northern Mexico at a time when grape-growing was forbidden by Spain. The variety was introduced into California at a very early day and was raised by the Mission fathers, hence the name. Mission is believed by some to be a hybrid between Vinifera and Girdiana. Vigorous; canes short-jointed, dull dark brown to grayish; leaf above medium size, slightly oblong, five-lobed; stamens erect; clusters slightly shouldered, loose, distinctly compound; berries medium, round; skin thin, purplish-black with heavy bloom; flesh tender, vinous, sweet; very good; ripens with Concord in Texas; said to be imperfectly self-fertile.

Missouri. *Missouri Seedling.* Mentioned by Prince in 1830 as a native grape. Vine weak, not very productive; bunches medium size, loose; berries small, round, bluish-black with little bloom; tender with little pulp, sweet and pleasant.

Missouri Bird Eye. Mentioned in the *United States Patent Office Report* for 1859 as being free from rot in the vicinity of Hermann, Missouri.

Missouri Muscadine. Mentioned in the *Illinois Horticultural Society Report* for 1877 as being very hardy and very productive.

Modena. (Lab.) A Concord seedling; from Caywood, about 1867. Vigorous and hardy; bunch and berry medium, roundish, black; similar to Concord in flavor and ripens about with that variety.

Moffats. Mentioned in the *Minnesota Horticultural Society Report*, 1877, as being a large, hardy grape.

Moltke. (Lab. Vin.) A seedling of Salem; from F. E. L. Rautenberg, of Lincoln, Illinois. Very productive and vigorous, resembles Agawam; cluster medium, sometimes shouldered; berries very large, oblong, dark red; skin thick; sweet and aromatic; ripens ten days earlier than Agawam.

Monarch. (Lab.?) Tested by the Alabama Experiment Station and reported as "vigorous and a strong grower. Clusters large, compact; berries large, round, black with blue bloom; skin thick; pulp half tender, pleasant, quality good; season last of August; productive. A promising market grape."

Monard. Vine weak; stamens reflexed; bunch small to medium; berry medium, light red; very good; a few days later than Concord.

Monlintawba. (Mon. Linc. Vin. Lab.) A seedling of *Vitis monticola* by Fern Munson; from Munson. Stamens depressed; cluster large; berry small, purple; ripens very late.

Montclair. (Lab. Vin.) From C. C. Corby, of Montclair, New Jersey. Moderately vigorous, not fully hardy, productive; stamens upright; clusters above medium, long and broad, tapering, shouldered; variable in compactness; berries large to medium, slightly oval, dark red with lilac bloom, unusually persistent; skin thin, tough; pulp greenish, somewhat tough and solid, slightly vinous, sweet; good to very good; late in ripening.

Montisella. (Mon. Linc. Lab. Aest.) A seedling of *Vitis monticola* crossed with Laussel; from Munson. Stamens reflexed; cluster medium; berry medium, purple; ripens very late.

Montour. (Lab.) Mentioned by the United States Department of Agriculture in their report for 1869 in a list of varieties of Labrusca.

Montreal. Noted in the *Rural New Yorker* for 1886 as being a new black grape, superior to Concord; from Wm. E. Green of Vermont.

Morin. Noted by Prince in *Gardener's Monthly*, 1863, in a list of worthless varieties.

Morrell Seedling. Raised by a Mr. Morrell of Germantown, New York; noted in *Gardener's Monthly* for 1871. A medium-sized blue grape with a sharp and pleasant flavor. Said to be a "better grape than Hartford Prolific or Concord, but not equal to them in earliness."

Morse. Noted by Prince in 1863 in a list of worthless varieties.

Mottled. (Lab. Vin.) *Carpenter's Seedling.* An offspring of Catawba grown by Chas. Carpenter, Kelleys Island, Ohio, about 1860. Vigorous, hardy and prolific; bunch medium, shouldered, compact; berries medium, round, like Catawba in color and mottled with darker shades; skin thick; pulp tender, sweet, juicy, brisk and sprightly, rather pulpy and acid at center.

Mountain. One of a list of worthless varieties mentioned by Prince in *Gardener's Monthly*, 1863.

Mount Lebanon. (Lab. Vin.) From George Curtis of the United Society of Shakers, Mount Lebanon, Columbia County, New York; supposed to be a cross of Spanish Amber and Isabella. Bunch medium; berry round, reddish; flesh pulpy, tough, sweet.

Mrs. McLure. (Rip. Lab. Vin. Bourq.) *McLure.* One of Dr. Wylie's hybrids from a cross between Clinton and Peter Wylie; noted by the American Pomological Society in 1875. Vigorous, productive; foliage resembles Clinton; stamens upright; bunch medium, shouldered, not very compact; berries medium, round, white; good; ripens before Catawba.

Mrs. Munson. (Linc. Bourq.) From Munson; a cross between Neosho and Herbemont. Vigorous, hardy, very productive; clusters large, conical, shouldered, compact; berry small, purple with a thin, tough skin; pulp melting, juicy, sprightly; very good; ripens late.

Mrs. Stayman. (Bourq. Lab. Vin.) A Delaware seedling; from Dr. J. Stayman. Very vigorous, hardy, healthy and productive · free from rot and mildew; bunch large, compact; berry above medium, red with light bloom; skin thick, tough; pulp tender, juicy, sprightly, rich, sweet; very good; ripens about with Concord.

Muench. (Linc. Bourq.) Parentage, Neosho crossed with Herbemont; from Munson, in 1887. Very vigorous, hardy; cluster large, usually shouldered; berry below medium, round; skin thin, tough, dark purple; flesh tender, juicy.

Multiple. (Bourq. Lab. Vin.) *Munson's No. 107.* A seedling of Herbemont pollinated by Triumph; produced by Munson. Vigorous, self-fertile; cluster large; berries medium, purple; ripens very late.

Muncie. (Rip. Lab.) Said to be a seedling of Elvira; from Leavenworth, Kansas. Described by Stayman in *Missouri Horticultural Society Report*, 1892, as follows: "Bunch medium, compact, handsome; berry medium, white; skin thin, rather tough; pulp tender, juicy, sprightly, rich, sweet, very good; vigorous, hardy, healthy and productive; free from rot and mildew; ripe about with Concord."

Muncy Black. (Lab.) Mentioned by Prince in 1830 as having been found on the same farm as the Pale Red Muncy. Very productive, with harsh and unpleasant fruit.

Munier. Noted in *Gardener's Monthly*, 1863, as coming from a German near Massillon, Ohio. Early, of excellent quality as a table grape, productive and as hardy as the Isabella or Concord.

Munson. (Linc. Rup.) *Jaeger No. 70.* A seedling of *Jaeger No. 43* crossed with a male Rupestris. Very vigorous, productive; clusters medium, shouldered, moderately compact; berries large, black; slight Post-oak flavor; ripens before Norton.

Murdock. A grape grown by Judge Murdock at Elkader, Clayton County, Iowa. Hardy and free from mildew; very sweet.

Muscadine Superior. A seedling exhibited by John Hopkins, of Wilmington, North Carolina, before the American Pomological Society in 1871.

Muscat. The name of a group of Vinifera grapes the best known variety of which is Muscat of Alexandria.

Muscat Catawba. Listed by Prince in 1863 as a worthless sort.

Mylitta. (Lin. Rup. Lab.) From Munson; a cross between America and Beacon. Cluster large; berry large, black; ripens late; self-fertile.

Nahab. (Lab.) Described in *Alabama Station Bulletin No. 87* for 1900 as follows: "Vines lacking in vigor; clusters medium in size, compact; berries medium, round, white; skin thin; pulp tender, juicy, slightly acid; season middle of August; not productive."

Nashua. Mentioned by Prince in 1830 as originating in Maine.

Nashua. A variety under this name was exhibited at the Massachusetts Horticultural Society meeting in 1869 by Allen Putnam. Described as "between the Hartford and Concord, but sweeter than either and does not drop."

Naumkeag. (Lab. Vin.) A seedling of Isabella raised by a Mr. Bowker of Salem, Massachusetts, which fruited in 1848. Bunches resemble the parent; berries above medium, round, red with slight bloom; pulpy, with Isabella flavor; a little earlier than its parent.

Nazro. (Lab. Vin.) Prince, in 1830, states that this variety was originated from seed of the Troy grape planted in 1825 by Henry Nazro of this state; fruited in 1828. Berries medium in size, oval; sweet, of pleasant flavor, slightly foxy; ripens early.

Nebraska. Noted by Fuller in 1867 as "a beautiful ornamental vine, but the fruit of no value."

Neff. (Lab.) *Keuka.* From a Mr. Neff, near Keuka, New York. Bunch and berry medium, dark red; foxy; good; early.

Nell. (Bourq. Aest. Lab.) A seedling of Herbemont crossed with Norton; from Munson. A very late, large-clustered, small-berried, white grape; self-fertile.

Nelson. A chance seedling from Roger Nelson, Ilion, New York, about 1896; undescribed.

Neosho. (Linc.) Found growing wild on the farm of E. Schoenborn, Neosho, Missouri, by H. Jaeger. Very vigorous, hardy, not productive; large, glossy, beautiful dark green foliage; stamens reflexed; bunches medium to large, long, shouldered; berries small, black with blue bloom; skin thin; pulp firm, sweet, spicy; produces a light wine with a peculiar aroma.

Neponset. Noted as a worthless sort by Prince in 1863.

Nerluton. One of Marine's seedlings. Vigorous; leaf large, leathery; cluster large; berries medium, black.

Neva Munson. (Linc. Bourq.) *Neva.* One of Munson' scrosses between Neosho and Herbemont; originated about 1885. Very vigorous, hardy and productive; stamens upright; clusters large, cylindrical, shouldered, compact; berries small, purple with thin, tough skin; pulp tender, juicy, sprightly, sweet flavor; too late for the North.

Neverfail. Mitzky in 1893 says: "This variety was found in Roanoke County, Virginia. Feeble at first but grows rapidly when older; free from rot; bunch and berry medium, black, juicy and vinous; too late for the North."

Newark. (Vin. Rip. Lab.) A hybrid between Clinton and a Vinifera; from Newark, New Jersey. Vigorous, hardy and very productive; bunches long, loose, shouldered; berries medium, dark, almost black; sweet, juicy and vinous, of pleasant taste.

New Buda. (Lab.) Tested by the United States Department of Agriculture in 1863 and thought to be Concord.

Newburgh. (Lab. Vin.) A seedling of Concord crossed with Trentham Black; from Ricketts. Mitzky in 1893 says: "Bunch and berry of the largest size, bunch heavily shouldered; berries large, black, with bluish-gray bloom; flesh tender, juicy with peculiar flavor; very vigorous, a fine amateur grape."

Newburgh Muscat. (Lab. Vin.) *Culbert's No. 3; White Moline; White Muscat of Newburgh.* From Dr. W. A. M. Culbert of Newburgh, New York, in 1877; a seedling of Hartford crossed with Iona; exhibited before the American Pomological Society in 1877. Vigorous and hardy, unproductive; flowers sterile; stamens reflexed; clusters medium, short, often single-shouldered, loose; berries medium, roundish, pale yellowish-green, gray bloom, shatter badly; skin thick, tender; flesh soft and tender, musky, sweet, mild; good.

New Haven. (Lab.) *New Haven Red.* A seedling of Concord; from J. Valle of New Haven, Missouri. Vigorous, thrifty, hardy, productive; stamens upright; bunches medium, variable in compactness, sometimes shouldered; berries large, black with blue bloom; skin thin and tender; pulp tender, juicy, good; ripens about a week before Concord.

Newman. (Linc. Vin. Lab.) A cross between Big Berry and Triumph; from Munson, introduced in 1894. Vigorous, hardy, productive; stamens erect; bunches large, loose; berry large, black, with thin tough skin; pulp tender, juicy, nearly sweet; good; late.

New Mary. (Lab. Vin.) Mitzky, 1893, says this is "Lindley under a new name."

Newport. (Bourq.) A seedling of Herbemont; resembles its parent.

Newton. A large, showy grape bought from an agent by Stephen H. Shallcross, Louisville, Kentucky, and exhibited at the Mississippi Valley Horticultural Society meeting at St. Louis in 1881.

Newtonia. (Linc. Rup. Lab. Vin.) A seedling of America pollinated by R. W. Munson; from Munson, in 1897. Cluster large; berry medium, black; self-fertile; ripens early.

Nimalba. (Linc. Bourq.) From Texas. Tested by Georgia Experiment Station and described as follows: Very weak, light yielder; stamens upright; bunch small, compact; berry small, white; good; ripens with Catawba.

Nina. (Lab. Vin.) Mitzky, 1893, says this is "a seedling of Diana, raised by C. H. Woodruff, Ann Arbor, Michigan. Vine very hardy and productive; bunch medium to large; berries medium, dark red, very sweet and good quality; ripens early with Champion and Moore Early, in quality better than either."

Ninekah. (Lab. Vin. Bourq.) A seedling of Delago crossed with Brilliant; from Munson, in 1899. Cluster medium; berry large, red; self-fertile; ripens mid-season.

Nizola. Noted by Cole in 1849. From Col. L. Chase, Cornish, New Hampshire; medium bunch and berry; vinous and excellent.

Nonantum. (Lab. Vin.) A seedling raised by Francis Dana near Boston, Massachusetts; exhibited before the Massachusetts Horticultural Society in 1864. Vigorous; bunch small, shouldered; berries medium, oval, entirely free from pulp; good; in appearance very much like Isabella and probably a seedling of that variety.

Nonpareil. (Linc. Vin. Lab. Bourq.) A seedling of Early Purple crossed with Brilliant; from Munson, in 1896. Cluster medium; berry large, red; self-fertile; ripens early.

Nora. (Bicolor, Vin.?) Received for testing at this Station in 1902 from Dr. G. L. Tinker, New Philadelphia, Ohio. Lacks vigor; tendrils intermittent; buds apparently tender. Has not fruited.

North America. (Lab. Rip.?) Noted frequently since 1860; said to be a seedling of Franklin. Vigorous, hardy, healthy, unproductive; bunch small, shouldered; berries round, black; juicy, sweet, foxy; early.

North Carolina. (Lab. Vin.) *North Carolina Seedling.* From J. B. Garber, Columbia, Pennsylvania. Very vigorous, hardy, healthy, very productive; stamens erect; bunches medium to large, generally shouldered, compact; berries large, oblong, black with slight blue bloom; skin very thick; pulpy, sweet; good; ripens a few days after Hartford.

North Carolina White. Noted by Prince in 1830. From North Carolina and different from Scuppernong; white berries of good flavor.

Northern Light. (Lab.) A chance seedling from John D. Cameron, L'Original, Ontario, about 1880. Vigorous, hardy, productive; leaf thick, leathery; bunch long, cylindrical, compact, sometimes shouldered; berries large, round, greenish-white with thin whitish bloom; pulp juicy, melting, sweet, vinous; good; ripens a little later than Champion.

Northern Muscat. Mentioned in *Rhode Island Station Bulletin No. 6*, 1890, as being a new variety received from Ohio for testing; bunch medium or above; berry medium, amber color; good.

North Star. Noted in the *Wisconsin Horticultural Society Report*, 1886, as a seedling from Waupaca County, Wisconsin. A black grape with long clusters; poor quality.

Obed. Noted by Mitzky, 1893, as "a chance seedling grown by Obed Harrell, Chrisman, Illinois. Cluster medium to large, moderately compact; berry medium, round, whitish-green with delicate bloom; vigorous and productive."

Oberon. (Vin. Lab.) From G. W. Campbell about 1880; a cross between Concord and Muscat Hamburg. Moderately vigorous, productive, not hardy; bunch large; berry large, black, resembles Muscat Hamburg; good.

Occidental. (Lab. Vin.) Produced by N. B. White from a cross between a wild Labrusca and Black Hamburg. Clusters compact with dark red berries.

Octavia. (Linc. Vin. Lab. Bourq.) A seedling of Early Purple crossed with Brilliant; from Munson, in 1890. Cluster large; berry large, red; self-sterile; ripens midseason.

Offer. (Lab.) Warder in 1867, says of this variety: "Bunch large; berry large, dark red, sweet, musky; not approved."

Ohio Claret. A native variety under test by the United States Department of Agriculture in 1863.

Oktaha. (Champ. Vin. Lab. Bourq.?) A seedling of *Vitis champini* pollinated with Brilliant or Delaware; from Munson and introduced in 1898. Moderately vigorous, healthy, productive; cluster medium, cylindrical, shouldered, compact; berries medium, round, black with little bloom; skin thin, tough; pulp melting, juicy, sprightly, good; early.

Old Ford. (Lab.) Noted by Mitzky in 1893 as a wild grape from the mountains of North Carolina. Remarkably healthy and vigorous, productive; bunches medium; berries large, round, dark wine color; pulpy, juicy, sweet; very early.

Old Gold. (Rip. Lab. Vin.) *Munson's No. 39.* Elvira crossed with Brighton; from Munson. Tested by Virginia Experiment Station and discarded; not introduced by the originator.

Old Hundred. (Cin. Aest.?) Mitzky, in 1893, says of this variety: "Introduced by J. A. Francis, Salem, Virginia. Bunch medium, not very compact; about the size of Clinton; black; very prolific; good table and wine grape; contains Cinerea blood in large quantity with probably Aestivalis."

Olita. (Lab. Vin. Bourq.) A seedling of Delaware fertilized by Irving; from Munson in 1898. Moderately vigorous, not hardy, moderately productive, somewhat subject to attacks of mildew; flowers semi-fertile; stamens upright; clusters variable in size, long, nearly cylindrical, single-shouldered, variable in compactness; berries medium, round, yellowish-green, often with slight amber tinge, gray bloom; skin thin; somewhat

tough; flesh tender and melting; mild, slightly vinous, nearly sweet; fair; ripens about with Concord; of the Delaware type but inferior to that variety in both fruit and vine characters.

Olitatoo. (Vin. Lab. Linc.) A seedling of Armlong crossed with Excelsior; from Munson in 1896. Cluster very large; berry medium, white; self-fertile; ripens very late.

Olmstead. (Lab.) A fox grape mentioned by Nicholas Longworth in Buchanan's *Culture of the Grape*, 1852.

Olympia. From William M. Marine about 1870. Bunch and berry medium, round, black.

Omega. (Lab. Vin.?) From John Burr, Leavenworth, Kansas. Moderately vigorous, hardy, healthy, not productive; clusters medium to small, short, usually shouldered, compact; berries medium, oblate to roundish, dull red with thin gray bloom, persistent, soft; flesh green, tender, juicy, sweet, sprightly; good; ripens about with Concord; self-sterile.

Omega. Noted in the *Record of Horticulture*, 1868, as "a new variety from the West, resembling Catawba but said to be better." Possibly the same as the preceding.

Onderdonk. (Bourq. Lab.? Vin.?) Said to be a pure seedling of Herbemont but also given as Herbemont crossed with Irving; from Munson, about 1890. Very vigorous, hardy, very productive; affected some with soft rot; stamens upright; clusters large, conical, compact; berries small, white, translucent, with scattering dots; skin thin, tough; pulp juicy, sweet, sprightly; very good; makes excellent white wine.

Oneovem. (Rip. Bourq. Lab.) A seedling from Munson in 1897; from One Seed fertilized by Rommel. Cluster medium; berry large, white; stamens reflexed; ripens late.

One Seed. (Rip. Bourq. Lab.) A variety produced by Munson from Elvira crossed with Humboldt; used by him as a parent in some of his breeding work.

Onondaga. (Lab. Vin. Bourq.) A seedling of a cross between Diana and Delaware; from Lewis Hueber, Fayetteville, Onondaga County, New York; exhibited at the American Institute Fair in 1865. Hardy, vigorous and prolific; bunches large, compact; berries medium, amber color with thick skin; pulp sweet, rich, fine flavored; ripens with Delaware.

Ontario. (Lab.) A very large black grape, probably identical with Union Village.

Onyx. (Lab. Vin. Bourq.) Parentage, Delago crossed with Golden Gem; from Munson in 1899. Cluster medium; berry medium, dark red; stamens erect; ripens early.

Opal. (Lab. Vin.) A white seedling of Lindley crossed with Martha; from Munson, introduced about 1892. Lacks vigor; hardy, not productive at this Station; self-fertile; bunch medium to large, shouldered, compact; berries medium, nearly round, yellowish-white with thin white bloom; skin thin, tough; pulp tough, not readily releasing seed, juicy, sweet, sprightly, vinous with little or no foxy flavor; good; ripens with Niagara.

Oriole. (Linc. Bourq.) A seedling of Post-oak crossed with Devereaux; from Munson. Vigorous and productive; stamens erect; bunch medium to large, cylindrical, shouldered, moderately compact; berries small, black, with thin, tough skin; pulp tender, sweet; best quality; very late.

Orphan Boy. (Vin. Lab. Bourq.) Noted by Mitzky, 1893, as from J. H. Dawson, Weatherford, Texas, and as a cross between Delaware and Wilder. Bunch medium, shouldered; berry large, black with fine bloom; quality much like Delaware; ripens a little after Delaware.

Orwigsburg. (Lab. Vin.) *Black Palestine; Schuylkill.* Found growing near Orwigsburg, Schuylkill County, Pennsylvania, by Dr. W. E. Hulings of Philadelphia. Generally supposed to be a hybrid between a Vinifera and some native species, probably Labrusca; said to be productive, hardy, subject to mildew; berries round, small, white; juicy, sweet; good.

Osage. (Lab. Vin.) A black seedling of Concord; from John Burr, of Kansas. Vigorous, usually hardy and healthy, medium to very productive; flowers sterile; stamens reflexed; tendrils continuous; clusters variable in size, usually short, shouldered, compact; berries large, distinctly flattened to sometimes roundish; dull black with blue bloom, shatter badly, not firm; flesh tough, foxy, sweet, good; of Concord type but less foxy; a week earlier than its parent.

Osceola. (Lab. Vin. Bourq.) A seedling of Standard; from Dr. J. Stayman. Vigorous, very hardy, healthy and productive; stamens upright; bunch medium to large, compact; berry large, white; skin thin, tough; pulp tender, sweet, rich, sprightly, vinous; very good; ripens with Jewel.

Osee. (Rip. Lab.) A white Riparia from John Burr, Leavenworth, Kansas; said to be a seedling of Grein Golden. Variable in vigor, very productive, hardy; bunch medium, short and thick, compact; berry white, very large; tender, very juicy, sprightly, sweet with a peculiar flavor; good only for wine; ripens before Concord.

Oskaloosa. (Bourq. Lab.) A Delaware seedling; from Dr. J. Stayman. Vigorous, hardy, healthy and productive; bunch medium, compact; berry large, black with bloom; skin thick, tough; pulp tender, rich, sweet, sprightly, juicy, vinous; very good; very late.

Osmond. (Rip.) Noted by Downing, 1869, as a seedling of Franklin from O. T. Hobbs, Randolph, Pennsylvania. Bunch small; berry small, round, black, blue bloom; flesh vinous, harsh.

Oswego. (Lab.) Noted in *Bushberg Catalogue*, 1894; origin unknown, from Dr. J. Stayman of Leavenworth, Kansas. Vigorous, hardy and productive; bunch and berry very large, handsome, resembling Concord in color; little pulp and with native aroma; ripens with Concord.

Otoe. Mentioned in the *United States Department of Agriculture Report*, 1863, as one of the varieties under trial in the government experimental garden.

Ouachita. (Aest.) A wild grape found on the plantation of Dr. G. W. Lawrence near Midland on the Ouachita River, Hot Springs County, Arkansas. Hardy and productive with long, compact bunches; one time popular in France for wine-making.

Owego. From John Burr. Vigorous, hardy, healthy and productive; bunches medium, compact; berry very large, red; tender, juicy, sprightly and vinous; best quality.

Owens White. (Lab.) Noted by Prince in 1830 as from Wm. Owens of Virginia. A large-fruited, white Labrusca.

Owosso. (Lab. Vin.) A chance seedling from C. H. Goodhue, Owosso, Michigan; supposed to be from Catawba. Very vigorous, hardy, productive; self-sterile; bunches medium to large, round, shouldered, compact; berries large, round, dark amber with slight lilac bloom; pulp tough, sweet, vinous; quality not high; ripens with Delaware.

Ozark Seedling. Among the worthless sorts listed by Prince in *Gardener's Monthly*, 1863.

Pagan. Noted by Mitzky, in 1893, as on trial.

Palermo. (Lab. Vin. Bourq.) A seedling of Delago crossed with Brilliant; from Munson, fruited in 1899. Intermediate in vigor, hardy, not a heavy bearer; tendrils usually intermittent; foliage medium to large, light green, pubescent; flowers semi-fertile; stamens upright; clusters medium to below in size and length, often single-shouldered, compact; berries average size, roundish, yellowish-green with tinge of amber, covered with thin gray bloom, adherent, firm; skin thick, tough; flesh green with tinge of yellow, tender and nearly melting, vinous, sweet from skin to center, agreeable flavor; very good.

Palmer. (Lab.) From a Mrs. Millington, of New York, about 1890. Vigorous, hardy; cluster large; berry large, round, black; pulp soft, sweet; very good.

Palmetto. (Bourq.) From David Johnson, Union, South Carolina. Resembles Herbemont very closely in form, size of cluster and berry but is distinct. Berry dark red, heavy light blue bloom; flesh soft, juicy, sweet, aromatic, vinous.

Pamlico. (Rot.) Noted in the *United States Department of Agriculture Report* in 1871 as a Rotundifolia with must having a saccharine strength of 80°.

Paradox. (Lab. Vin.) *Seedling No. 502.* A seedling of Hartford crossed with Iona; from Ricketts. Vine variable in vigor, not always hardy, an uncertain bearer; tendrils continuous; foliage healthy, large to medium; flowers semi-fertile, bloom medium late; stamens upright; fruit ripens about with Concord or earlier, does not keep well; clusters large, of medium length, broad, compact; berries medium, roundish, purplish-black, glossy, covered with heavy blue bloom, drop considerably from pedicel, firm; skin thin to medium, often rather tender, astringent; flesh nearly tough, stringy, somewhat vinous; good in quality.

Paragon. (Lab. Vin.) A seedling of Telegraph crossed with Black Hamburg; from Chas. J. Copley, Stapleton, New York, years ago. Moderate vigor; leaves dark

green, three- to five-lobed; cluster large, compact; berries large, black; quality very good; good keeper; rots some.

Paragon. (Lab.) *Burr's No. 15.* From John Burr, Leavenworth, Kansas. Lacks vigor; tendrils intermittent; flowers nearly fertile; stamens upright; season between Worden and Concord; keeps well; clusters not uniform, short, compact; berries medium, roundish, black, glossy, covered with abundant blue bloom, persistent; skin varies in toughness, tender, not astringent; flesh moderately tender, stringy and foxy, nearly sweet at skin to acid at center; good, equal to Concord.

Parker Rocky Mountain Seedling. Noted in a list of native grapes under test in the experimental vineyards of the Department of Agriculture in 1860.

Pattison. (Lab.?) Given in a list of earliest ripening varieties in the report of the Canada Central Experimental Farms for 1905.

Pauline. (Bourq.) *Burgundy of Georgia; Red Lenoir.* A Southern grape valuable only for wine; grown rather extensively fifty years ago. Not vigorous; leaves more downy than Devereaux; cluster large, long, tapering, shouldered, compact; berries below medium, copper color or violet, lilac bloom; brisk, sweet, vinous.

Paultne. Described by Wm. Falconer, Glen Cove, New York, in *Country Gentleman* in 1884. Cluster medium, loose; berries greenish, unequal, not over medium; foliage healthy.

Pawnee. (Aest. Lab.) From Dr. J. Stayman, Leavenworth, Kansas. Medium in vigor, productive; stamens upright; cluster large, double-shouldered, compact; berry above medium; skin thin, tough, black; pulp tender, meaty, not juicy, sprightly, rich, vinous, sweet, peculiar flavor resembling Ozark; quality medium.

Paxton. (Lab.) A Concord seedling; from F. F. Merceron, Catawissa, Pennsylvania; fruited in 1863. Said to be as hardy and productive as the Concord, which it much resembles; large bunch and berry; quality given by originator as better than Concord.

Pearl. (Rip. Lab.) *Rommel's Taylor Seedling No. 10.* From Jacob Rommel, of Morrison, Missouri. Very vigorous, hardy, variable in productiveness; tendrils continuous, bifid to trifid; leaves large, light green; lower surface pale green, pubescent; flowers semi-fertile, open early; stamens upright; fruit ripens with Concord or later; clusters intermediate in size, short, slender, usually with a small single shoulder, compact; berries small, roundish, very light green, often with amber or yellow tinge, covered with thin gray bloom, shatter badly; skin variable in thickness and toughness; flesh moderately juicy, tender and vinous, sweet from skin to center; fair in quality. The vine is peculiar in having very hairy petioles and nearly glabrous shoots.

Pedee. (Rot.) Discovered on Pedee River, South Carolina, over thirty years ago. Vigorous; stamens reflexed; cluster very small, loose, irregular; berry very large, black; medium in quality; ripens a month after Scuppernong.

Peerless. (Lab. Vin.) A hybrid between Hartford and Muscat Hamburg; from Geo. W. Campbell, Delaware, Ohio. Productive; cluster long, slightly shouldered, rather loose; berry green, large, adherent; skin thin, tough; seeds two to four; pulp quite large, firm, separating easily from seeds, juicy; excellent quality.

Peggy. (Lab.) In 1869, R. W. Gandy, Troy, Iowa, described Peggy as hardy and healthy; berry size of Isabella and equal to Delaware in flavor; ripens five days before Hartford. In 1876, John Balsiger, of Highland, Madison County, Illinois, said of it: "A very foxy, small and valueless grape."

Pell's Illinois. (Rip.?) Found wild in prairies of Illinois and sent to Prince by G. T. Pell, of Illinois, about 1830.

Peola. (Lab. Vin.) From John Burr, Leavenworth, Kansas, about 1890. Vigorous, hardy, healthy and productive; free from rot and mildew; berry medium, black, with some bloom; skin thin, tough; pulp tender, juicy, sweet, sprightly, vinous; very good; ripens about with Concord.

Perfume. Named by a General Jones previous to 1830. The original vine grew on a small island in the Roanoke River a few miles above the Great Falls, in North Carolina. A. J. Davie, describing it in the *American Farmer* gives the color as purple; berry one-third larger than common grape of woods, slightly enlongated; fine flavor.

Perry. (Linc. Bourq.) Parentage, Post-oak No. 2 fertilized with Herbemont; from Munson. Very vigorous, healthy, very productive; cluster large, slender, compact; berry small to medium, purple; skin thin, tough; pulp melting, juicy, good; season two weeks later than Concord.

Peter Wylie. (Lab. Vin. Bourq.) *Peter Wylie No. 1.* Parents, Halifax crossed with a Vinifera, fertilized with Delaware crossed with a Vinifera; from Dr. A. P. Wylie, of Chester, South Carolina. Vigor and hardiness medium, inclined to rot in some places, not productive; shoots smooth; leaves medium to small, shallow three-lobed, glabrous underneath; stamens upright; cluster medium to large, compact, often shouldered; berry medium, greenish to greenish-yellow; skin thin, tender; flesh tender, sweet, vinous, Muscat flavor; quality good; ripens soon after Concord.

Pierce. (Lab. Vin.) *Isabella Regia; Royal Isabella.* A bud-sport from Isabella, originating about 1882 with Mr. J. P. Pierce, of Santa Clara, California. Very vigorous, large leaves, prolific; cluster large; berries very large, black, light bloom, not firm; pulp tender, sweet, strongly aromatic; good; a valuable grape west of Rocky Mountains.

Pioneer. (Lab. Vin.) A seedling of Isabella and very similar to it.

Piqua. Mentioned by Buchanan as raised and exhibited by Longworth in 1846.

Pittsburg Seedling. (Lab. Vin.) Found growing wild in 1851, by J. S. Arthur, of Pittsburg, Pennsylvania. Does not yield as well as Delaware, but earlier, more sprightly and vinous and with less pulp; ripens in August.

Pizarro. (Vin. Rip. Lab.) Parents, a Clinton seedling crossed with a Vinifera; from J. H. Ricketts, Newburgh, New York. Medium in vigor, productive; stamens

upright; cluster large, loose; berry medium, black, oblong; juicy, sweet, aromatic; good quality; ripens mid-season.

Planchette. (Bourq. Lab. Vin.) Herbemont fertilized by Triumph; from Munson. Self-fertile; cluster medium; berry white; season late.

Planet. (Lab. Vin.) From Ricketts; parents, Concord crossed by Black Muscat of Alexandria. Healthy and productive; cluster large, loose, shouldered; berries large, intermixed with smaller ones which have no seeds, oblong; pulp tender, juicy, sweet; good flavor with slight taste of Muscat.

Plymouth. (Lab.) *Plymouth White.* Noted in the *United States Patent Office Report* of 1860 as a native white grape, suitable for culture in the Northern and Middle States.

Pocohontas Red. (Lab.) A worthless variety noted in *Gardener's Monthly* for 1863.

Poeschel Mammoth. (Lab. Vin.) A seedling of Mammoth Catawba; from Michael Poeschel, Hermann, Missouri. Healthy; cluster medium, compact, sometimes shouldered; berry very large, round, red; pulpy, deficient in flavor; season a week later than Catawba.

Pollock. (Lab. Vin.) From a Mr. Pollock, of Tremont, New York, previous to 1862. A free grower; foliage thick and leathery; free from mildew; cluster compact, long, large; berry dark purple or black; flesh tender, vinous, not too sweet.

Pond's Seedling. (Lab. Vin.) A seedling grown by Samuel Pond of Massachusetts, previous to 1830. Very vigorous, short-jointed; shy bearer; cluster long, large; berry round, purple; juicy; good quality.

Ponroy. (Doan.) A named wild variety found by Munson in Wilbarger County, Texas. Stamens reflexed; cluster medium; berry medium, black; season early.

Pontotoc. (Vin. Bourq. Lab.) A cross of Delago fertilized with Brilliant; from Munson. Stamens reflexed; cluster and berry large, red; quality as good or better than Brighton; season early.

Porup. (Linc. Rup.) A seedling of Post-oak by Rupestris; from Munson. *Mississippi Station Bulletin No. 56* says: A late ripening variety; shatters badly; yield and quality poor.

Post-oak No. 1. (Linc.) From Munson, found in 1881. Stamens reflexed; cluster large; berry medium to small; black; season late.

Post-oak No. 2. (Linc.) From Munson, found in 1883. Stamens reflexed; cluster and berry medium; black; season very late.

Post-oak No. 3. (Linc.) Found by Munson in 1883. Stamens reflexed; cluster and berry black; season very late.

Potter. (Lab.) *Potter's Early; Potter's Seedling; Potter's Sweet.* Originated in Providence, Rhode Island about 1881. Vigorous; cluster compact, medium size, not shouldered; berry large; skin thick, black; pulp rather tough; season earlier than Concord.

Prairie State. (Lab.) From Jacob Christian, Mount Carroll, Illinois, before 1892. Hardy, productive; cluster large, compact; berries large, white, fine bloom; skin thin; no pulp, sweet, pleasant flavor; good; ripens ten days before Concord.

President. (Lab. Vin.) A seedling of Herbert; from Munson. Strong, healthy, prolific; flower perfect; cluster medium, compact; berry large, black, persistent, does not crack; quality better than Concord; ripens with Moore Early.

Presly. (Lab. Rip.) *Lyon; President Lyon.* A seedling of Elvira crossed with Champion; from Munson, the name changed by him from President Lyon to Presly. Vigorous, hardy, produces good crops; tendrils continuous; flowers nearly fertile; stamens upright; fruit ripens the last of August; clusters medium, slender, cylindrical, frequently single-shouldered, loose; berries small, roundish, purplish-red, heavy blue bloom, persistent; skin medium, tender, adheres strongly to pulp; flesh dull green, juicy, tender, foxy, mild, sweet from skin to center; good quality.

Primate. (Lab. Bourq.?) Originated by John Burr, Leavenworth, Kansas, from mixed seed. Vigorous, hardy, healthy, productive; cluster long, compact, handsome; berry medium or above, red, firm; pulp tender, juicy, rich, vinous; quality very good; season a little after Concord.

Professor Brunk. Vigorous, healthy; cluster medium size, ragged; ripens unevenly; very late. Reported upon at Mississippi Experiment Station in 1899.

Professor Gulley. According to *Mississippi Station Bulletin No. 56*, 1899, vine and fruit resemble those of Concord and fruit ripens irregularly about the same time. Yield not so large, more subject to rot.

Professor Hilgard. (Linc. Bourq.) Parents, Post-oak crossed with Herbemont; from Munson. Cluster large, shouldered, compact; berry medium, purple; juicy, sweet and sprightly; medium to late.

Profitable. (Lab. Rip.) A seedling of Elvira fertilized by Perkins; from Munson. Vigorous and productive, hardy; stamens upright, perfectly self-fertile; cluster medium to large, long, medium compact, shouldered; berry medium size, round, inclined to oblong, pale greenish-red; skin rather thin, tender; pulp tender, sweet, juicy; flavor pleasant and agreeable; season about with Concord.

Profusion. (Linc. Lab.) Ten-Dollar-Prize fertilized by Worden; from Munson, 1889. Very vigorous; stamens upright; cluster large, compact; berry small, black, adheres well; quality good; later than Concord in Texas.

Progress. (Lab. Vin.) Thought to be a hardy native Labrusca by Black Hamburg cross; from A. F. Rice, of South Weymouth, Massachusetts, previous to 1883. Good grower; cluster medium size, shouldered; berries large, dark red; skin thick, rather tender; quite pulpy, juicy, not high flavored; quality fair.

Progress. (Lab. Vin.) From John Burr, Leavenworth, Kansas, previous to 1885. Very vigorous, healthy, hardy; cluster large, compact, shouldered; berry large, medium,

black, fine bloom; pulp tender, juicy, rich, vinous; quality best; season a little later than Concord.

Prolific. (Lab.) From Dr. Stayman about 1880. Vigorous, productive; clusters large, double-shouldered, compact, hang well on vine; berry large, black; season soon after Jewel.

Prolific Chicken Grape. (Rip.?) A wild grape from Goochland County, Virginia; mentioned by Prince in 1830. Very productive; flavor pleasant; ripens in August in Virginia.

Provost White. (Lab.) Noted by Strong in 1866 as a common wild variety of little value.

Prunella. (Vin. Lab.) A seedling from M. Vibert, of France, produced by crossing a Vinifera with Isabella, about 1842. Resembles Wilder very closely.

Pukwana. (Mont. Rup.) A seedling of *Vitis monticola* crossed with Rupestris; from Munson. Stamens reflexed; blooms mid-season; cluster small; berry small, black.

Pulaski. (Lab. Vin. Aest.?) From John Burr, Leavenworth, Kansas. Vine vigorous, hardy, medium to productive; canes long; tendrils continuous to sometimes intermittent; foliage large to medium; flowers nearly fertile; stamens reflexed; keeps well; clusters small, inclined to short, often with a small single shoulder, compact; berries intermediate in size, roundish, dark purplish-black covered with blue bloom; skin thin, tender, adheres to pulp; flesh greenish, tender, sweet; good to very good in quality.

Pulliat. (Bourq. Vin.) A seedling of Herbemont; from M. Pulliat, of France; received at this Station in 1896. Vigorous, not hardy, very productive; foliage shows Vinifera, mildews; tendrils intermittent; stamens upright; clusters large, compact, shouldered; berries small, round, black; pulp tender, moderately juicy, of good flavor; ripens about ten days later than Herbemont.

Pulpless. (Lab. Vin.) A seedling of Salem; from C. Engle, Paw Paw, Michigan. Vigorous, productive; stamens upright; cluster large, shouldered, medium in compactness; berry large, black, oval; vinous, rich; quality very good; ripens with Concord.

Purity. (Lab. Bourq. Vin.) A cross between Delaware and some native variety; from G. W. Campbell, about 1870. A white grape of the Delaware type but a stronger, healthier grower; foliage larger and thicker; bunches smaller than Delaware; berries larger; sweet, of very fine quality; ripens very early; difficult to propagate.

Purple Bloom. (Lab. Vin.) *Culbert's Seedling No. 6.* A seedling of Hartford and General Marmora; from Dr. W. A. M. Culbert, Newburgh, New York, exhibited before the American Pomological Society in 1877. Vigorous, hardy, productive; bunches large, showy; berries above medium, purple, of good quality.

Purple Favorite. (Aest.) Discarded as a worthless variety by United States Department of Agriculture in 1864.

Purple Marion. *Mottier.* Noted by W. R. Prince in *Gardener's Monthly* for 1863.

Putnam. (Lab. Bourq. Vin.) *Ricketts' Delaware Seedling No. 2.* A cross between Delaware and Concord; from J. H. Ricketts, Newburgh, New York, previous to 1871. Vine resembles Concord more than Delaware; tendrils intermittent; clusters medium, moderately compact, usually single-shouldered; berries medium, oval, black, persistent; pulp tender, sweet, good; ripens early.

Quassaic. (Vin. Rip. Lab.) A cross between Clinton and Muscat Hamburg; from Ricketts of Newburgh, about 1870. Usually vigorous, productive; stamens upright; bunch large, shouldered, sometimes double-shouldered, moderately compact; berries large, roundish-oval, black with heavy blue bloom; skin thin, tough; pulp tender, juicy, sweet, slightly vinous, rich, aromatic; good; ripens soon after Concord.

Queen of Sheba. Sent out from Connecticut about 1869 as a promising variety but proved to be Diana.

Quinnebang. Pronounced worthless by Prince in 1863.

Quintina. (Linc. Bourq.) A seedling of Early Purple crossed with Jaeger; from Munson in 1897. Cluster large; berry medium, black; stamens erect; ripens late.

Raabe. (Lab. Vin.) *Honey; Raabe's Honey; Raabe's No. 3.* Raised by Peter Raabe of Philadelphia about 1850; supposed to be a Catawba seedling but some say it is a cross between Elsinburgh and Bland. Vigorous, hardy, healthy, prolific; foliage much like Catawba; bunches small, compact, rarely shouldered; berries small, round, dark purplish-red, heavy bloom; pulp sugary, very juicy, vinous with Catawba aroma; very good; early.

Raabe's Seedlings. Peter Raabe, of Philadelphia, Pennsylvania, years ago originated several varieties of pure Vinifera seedlings. The best known of these were Brinckle and Emily. They were unfit for outdoor culture and are now long obsolete. Raabe originated native varieties as well as the above mentioned Vinifera sorts.

Rachel. Exhibited at the grape show in New York in 1867 from the vineyard of Rev. J. Knox, Pittsburg, Pennsylvania. Healthy and vigorous; bunch and berry medium, white; early.

Racine. (Linc.) According to *Bushberg Catalogue*, 1883, "of similar origin as Neosho and at first supposed to be the same grape but afterwards recognized as distinct." Hardy, healthy, not very productive; small pulpy berries of poor quality.

Ragan. (Linc. Lab. Vin.) *Reagan.* A seedling of Post-oak crossed with Triumph; from Munson about 1892. Vigorous and fairly productive; stamens upright; clusters large, conical, sometimes shouldered, compact; berries medium, roundish, a little flattened; skin moderately thick, tough, shiny black with blue bloom; pulp rather tender, juicy, some trace of Post-oak flavor; fair to good.

Raisin. Noted in the *Illinois Horticultural Society Report* for 1897. Very productive; a medium-sized bunch with small, black berries of fair quality.

Raisin de Cote. According to Prince 1830, this is a native of Louisiana of which there are two varieties, the more common one being dark blue, round with thick skin, somewhat pulpy, extremely sweet and not musky.

Ramsey. (Champ.) One of Munson's, a variety of *Vitis champini* found in San Saba County, Texas. Cluster small; berry medium, black; ripens early; self-sterile.

Randall. Received at this Station in 1893 from Peter Henderson and Company, New York, as a cutting of a seed sport originating in the garden of a Mr. Randall, Bayonne, New Jersey. It proved to be very similar if not identical with Agawam.

Raritan. (Lab. Bourq. Vin.) *Ricketts' Delaware Seedling No. 1.* A seedling of Delaware crossed with Concord, from J. H. Ricketts. Moderately vigorous, doubtfully hardy; foliage much like Delaware; quite productive; bunch medium, shouldered, resembles Delaware; berry medium, round, black; flesh juicy, sweet, vinous; ripens about with Delaware.

Rautenberg's Seedlings. F. E. L. Rautenberg, of Lincoln, Illinois, has originated many varieties of grapes. His varieties were raised from seed of various standard varieties and are most of them second generation hybrids. His best known sorts are: Amalia, Black Rose, Bismarck, Chicago, Clarissa, Cleopatra, Hatton and Moltke.

Read Seedling. From M. A. Read, Port Dalhousie, Ontario; awarded the first premium at the Industrial Fair, Toronto, 1895, as the best seedling grape. Described by the originator as vigorous with heavy foliage similar to Concord, very productive; bunch large, well shouldered, very compact; berry of fair size, firm, black; good; early.

Red Bird. (Lab. Vin.) *Munson's No. 33.* A cross between Lindley and Champion; from Munson, about 1888. Vigorous, hardy except in severe winters, variable in productiveness; tendrils continuous; flowers sterile; stamens reflexed; clusters medium, usually shouldered, variable in compactness; berries medium, roundish, dull dark red with heavy blue bloom; skin thick, tough; pulp tough, sweet, juicy, decidedly foxy; good.

Red Giant. (Lab.) From Pennsylvania, about 1898. Vigorous, healthy, prolific; sterile; bunch medium, compact; berry very large; skin thick and tough, dark red; pulp tender, sweet, foxy; similar to Columbian Imperial.

Red Jacket. From William M. Marine. A medium-sized bunch with large oval berries of the Isabella type.

Red Juice. Mentioned by Adlum in 1823. Said to make a claret wine.

Red Leaf. (Rup.) A wild Rupestris found in Missouri and used by Munson. Cluster very small; berry small, black; stamens reflexed; ripens early.

Red Riesling. Introduced by the Hermann Grape Nurseries, Hermann, Missouri. Described as being hardy and free from rot; bunches medium; berries dark red, large.

Red Rover. (Lab. Vin.) Found growing in the vineyard of C. W. Seelye at Vine Valley, on Canandaigua Lake, New York. Vigorous, healthy, fairly productive; clusters large, shouldered, moderately compact; berries medium, round, resemble Brighton in size and color; skin moderately thick and tough; pulp tender, sweet, vinous, juicy,

agreeable flavor; good; ripens two weeks later than Brighton and is a better keeper but not so high in quality.

Red Sheperd. (Rip. Lab.) Disseminated by a Mr. Estell of Rush County, Indiana. Very vigorous, resembles Taylor; bunches small and compact; berries small, round, red; sweet, very foxy.

Red Sweet Water. (Vin. Lab.) A seedling exhibited at the Ohio State Fair, 1876, from Dr. Clark of Lebanon; said to be of southern origin and of the Catawba type.

Regina. Listed among the grapes on trial in the government experimental garden in 1863.

Reinecke. (Lab.) From F. E. L. Rautenberg of Lincoln, Illinois. A seedling of Woodruff and, according to *Bushberg Catalogue*, 1894, not sufficiently distinct to be disseminated as a different variety.

Reinike. (Rip. Lab.) Noted in the *Wisconsin Horticultural Society Report*, 1871, as a vigorous, hardy grape resembling Clinton but with a less compact bunch.

Reliance. (Vin. Bourq. Lab.) Exhibited by J. G. Burrows, Fishkill, New York, before the American Pomological Society in 1881; a probable cross between Delaware and Iona. Vigorous, hardy and very productive; bunch resembles Delaware in size but not so compact; berry medium, light red; tender, juicy, sweet; ripens with Delaware.

Rentz. (Lab. Vin.) *Rentz Seedling; Riatz.* A Catawba seedling; from Sebastion Rentz, of Cincinnati. Vigorous, healthy, hardy, very productive; stamens upright; bunch medium, compact, usually shouldered; berries large, round, black, shatter badly; pulp firm, sweet, juicy, foxy; early.

Rhenish. Noted in the *United States Patent Office Report*, 1849–50, as being "an excellent variety", grown in Illinois; supposed to be of European origin, though doubtful.

Richmond. Mentioned in the *United States Department of Agriculture Report*, 1875, as being a very early southern grape.

Riehl's Seedlings. Seedlings originated by E. H. Riehl, of Alton, Illinois. Those tested at this Station all show unmistakable traces of Concord blood and are presumably seedlings of that variety. The most promising of these is Eclipse, for a description of which see page 254. With the exception of Eclipse, none of his seedlings has been named or introduced.

Riesenblatt. (Aest.) *Giant Leaf.* A chance seedling found growing in the vineyard of M. Poeschel at Hermann, Missouri. Hardy, healthy, productive; with a very large leaf; bunch and berries small.

Roanoke Red. (Cord. Lab. Vin.) From Texas, previous to 1900. Very vigorous; stamens upright; bunch medium, moderately compact; berry medium, reddish-purple; fair to good; ripens with Pocklington.

Robert Wylie. Produced by Dr. A. P. Wylie, Chester, South Carolina. Described in *Bushberg Catalogue*, 1883, as a great bearer but not quite hardy; bunch large and long; berry large, blue; skin thin; rich and juicy; ripens as late as Catawba.

Robeson. From a Mr. Robeson, of South Texas. Resembles Devereaux; probably a seedling of that variety but inferior to it in every respect.

Robeson Seedling. According to the *Bushberg Catalogue*, 1894, identical with Louisiana. Probably the same as Robeson.

Robinson Unnamed Seedling. (Lab.) Given in *Bushberg Catalogue*, 1894, as an accidental seedling found by Mrs. E. Mason, Lamont, Michigan, in 1881. Moderate grower with Labrusca foliage; bunch medium, round, reddish-amber with thin whitish bloom; pulp tender, juicy, vinous, sprightly, a little foxy, "very good"; ripens with Delaware.

Robusta. (Long.) A variety of *Vitis longii* found in Motley County, Texas, and used by Munson. Cluster small; berry small; self-sterile; ripens early.

Rockingham. (Lab.) A seedling of Concord; from T. B. Miner, of New Jersey. Described by Mitzky, 1893, as "hardy, vigorous, productive; bunch and berry medium, black; quality like Concord."

Rockland Favorite. (Lab.) A Concord seedling from Rockland, Massachusetts, introduced by Ellwanger & Barry as earlier, hardier and better than its parent. Bunch and berry large, black; sweet, juicy.

Roenbeck. (Vin.?) A chance seedling originated on the grounds of Jas. W. Trask, Bergen Point, New Jersey; first fruited in 1870. Fairly vigorous, hardy, very productive, with tendency to overbear; clusters medium, compact, shouldered; berries medium, roundish, slightly flattened; skin thin, tough, greenish with yellowish tinge, white bloom; pulp nearly transparent, melting, juicy, sweet, vinous; fair to good.

Rogers' No. 5. (Lab. Vin.) One of Rogers' unnamed hybrids; a seedling of Mammoth Globe crossed with Black Hamburg. Vigorous, not always hardy, moderately productive; tendrils continuous to intermittent; leaves large; stamens reflexed; self-sterile; cluster medium size, rather loose, frequently shouldered; berries large, roundish to oval; skin thin, tough, dark red to purplish-black; slightly foxy and vinous; good; ripens with Concord.

Rogers' No. 13. (Lab. Vin.) Parentage, Mammoth Globe crossed with White Chasselas. Vigorous, not always hardy, uncertainly productive; tendrils continuous to intermittent; stamens upright; self-fertile or nearly so; clusters medium, rather loose; berries large, roundish to oblate; skin medium thick, rather tender, dark red to almost black; flesh tender, foxy, rather sweet, vinous; good; ripens with Concord; not a good keeper.

Rogers' No. 24. (Lab. Vin.) Parents, Mammoth Globe crossed with Black Hamburg. Vigorous, productive, not always hardy; tendrils continuous to intermittent; stamens upright; flowers nearly self-fertile; clusters large, attractive, short, rather broad, variably compact; berries rather large, roundish to slightly oval, persistent; skin rather thin, rather tough, medium to light red; flesh somewhat tough, stringy, sweet, vinous; good; resembles Goethe and of about the same season.

Rogers' No. 32. (Lab. Vin.) A cross of Mammoth Globe and Black Hamburg. Moderately vigorous, usually hardy; tendrils continuous, sometimes intermittent; stamens upright; flowers partly self-fertile; cluster medium size, usually shouldered; berries large to medium, roundish to slightly oblate; skin rather thick and tough, dark red; flesh slightly tough, sweet, vinous, musky; very good; ripens after Concord and sometimes unevenly.

Rombrill. (Lab. Rip. Vin. Bourq.) A cross of Rommel and Brilliant; from Munson in 1897. Cluster large; berry large, yellow; medium early; self-fertile.

Rosalie. (Lab.) One of E. W. Bull's seedlings, exhibited by him before the Massachusetts Horticultural Society in 1874. Bunch large; berry red; very foxy; shatters.

Roscoe. (Lab. Bourq. Vin.) A seedling of Delaware crossed with Martha; from Munson, about 1888. Vigorous, healthy, moderately productive; clusters resemble Delaware in size and shape; berries medium, nearly round, white or pale green with white bloom; skin thin, tough; pulp tough, nearly sweet, sprightly; good; ripens with Delaware; self-sterile.

Rose. (Lab. Vin. Bourq.) A seedling of Delaware fertilized with Iona; from J. H. Ricketts, about 1873. "Bunch four inches long, compact; berries three-fourths of an inch in diameter, reddish purple; skin thick; pulp very tender, sprightly; very good; one of the earliest."

Roslyn. (Lab. Vin.) A seedling of Diana crossed with Hartford; from C. J. Copley, Stapleton, New York, about 1880. Bunch large, shouldered, very compact; berry large, round, sometimes compressed, purplish with thin bloom; skin thick; pulp firm, sweet with a strong musky flavor.

Roswither. (Lab. Bourq.) A seedling of Jewel; from L. Hencke, Collinsville, Illinois. Described by Mitzky, in 1893, as very productive and hardy; bunch and berry medium to large; dark purplish, nearly black; quality fine; ripens about ten days before Concord.

Ruby. (Lab.) A seedling from Geo. Haskell, Ipswich, Massachusetts. Hardy, variable in vigor; somewhat subject to rot; bunch medium, loose; berry above medium, round, dark ruby red; very good quality; ripens about with Hartford; stamens reflexed.

Ruby. (Lab. Vin. Rip.) A seedling of Elvira crossed with Brighton; from Munson, about 1890. Vigorous, healthy, not very hardy; bunches imperfectly filled, small, shouldered; berry medium, round, dull red with stripes, resembling Elvira in flavor and texture; ripens about with Concord.

Ruckland. (Lab. Vin.) Grown in Louisiana and said to have been brought from England. Munson pronounced it a Labrusca-Vinifera hybrid. Very late; red.

Rulander. (Bourq.) *Amoreux; Red Elben; St. Genevieve.* A southern grape, by some claimed to be a foreign seedling brought to this country by the early French settlers; probably native. Vigorous, short-jointed, healthy, not productive nor hardy; stamens upright; bunch medium, shouldered, very compact; berry small, roundish-

oval, purplish-black; without pulp, juicy, sweet and rich; makes an excellent pale red wine closely resembling sherry; ripens last of July in the South.

Rupel. (Rup. Rip. Lab.) A seedling of Rupestris pollinated by July Twenty-fifth; from Munson. Cluster small; berry small, black; ripens early; stamens upright.

Rupert. (Linc. Rup. Lab. Vin. Bourq.) A cross between America and Brilliant; from Munson. Vigorous, not very hardy, variable in productiveness; stamens upright; clusters medium, slender, usually shouldered, moderately compact; berries medium, nearly round, dark dull reddish-black with blue bloom; skin thin, tough; flesh pale green, tender, melting, somewhat musky, with Post-oak flavor; fair; ripens with Worden.

Rustler. (Lab. Vin.) From Munson, about 1888; a seedling of Lindley crossed with Martha. Vine vigorous, not always hardy, variable in productiveness; stamens reflexed; clusters medium, cylindrical, compact, sometimes shouldered; berries medium, roundish; skin medium thick, tough, dull light green with gray bloom, covered with scattering russet dots; pulp pale green, tough, stringy, foxy, sweet, somewhat musky; fair to good; ripens about with Concord.

Rusty Coat. Described by *Mississippi Station Bulletin No. 56* as healthy, fair yielder; bunches long, loose and irregular; berries medium, black; good.

Rutland. (Lab. Vin. Aest.) From D. S. Marvin, Watertown, New York, about thirty years ago; a seedling of Eumelan pollinated by Concord. Of medium vigor, not very hardy or productive; stamens upright; clusters medium, shouldered, usually compact; berries small, roundish, inclined to shatter; skin thin, somewhat tough, dark reddish-black with blue bloom; flesh tender and nearly melting, vinous, sweet; very good; ripens about with Worden.

Saginaw. Noted in *Michigan Pomological Society Report*, 1880, as a seedling from G. Wingworth, Saginaw City, Michigan. Vigorous, hardy, early.

St. Albans. (Lab. Vin.) A seedling of Ives crossed with Niagara; from Jacob P. Bossung, Jefferson County, Kentucky, about 1889. Fair grower, hardy, healthy; described as a " Black Niagara ".

St. Augustine. (Aest.?) Noted in *American Pomological Society Report* for 1877, as a native variety from Florida.

St. Catherine. (Lab.) From James W. Clark, Framingham, Massachusetts, about 1860. Vigorous, hardy, productive; bunches large, rather compact; berries large, round, red; pulpy, sweet, foxy.

St. Hilaire. (Rip.?) From Alexis Dery, St. Hilaire, Quebec, before 1892. Hardy, vigorous; cluster small, rather loose; berry small, black; pulp tough with a marked acidity.

St. John. (Lab. Vin. Bourq.) A seedling of Brighton pollinated by Delaware; from Henry B. Spencer, Rocky River, Ohio, about 1890. Vigorous, healthy, productive; foliage like Delaware; short-jointed; fruit resembles Brighton; pulp sweet, meaty, tender, vinous; ripens about with Delaware.

Salabra. Described by Georgia Experiment Station in 1901 as weak in vigor, unproductive; stamens reflexed; bunches irregular, very loose; berries small, black, of fair quality; ripens with Delaware; perhaps same as Salado.

Salado. (Champ. Lab. Vin.) Seedling of De Grasset crossed with Brilliant; from Munson. Resistant to drought, vigorous, prolific; pistillate; adapted to limy and black soils of the South.

Sally. (Bourq. Vin. Rip.) A cross between Delaware and Sherman; from D. S. Marvin, Watertown, New York. Vigorous, healthy; bunch smaller than Delaware; berry same size, sweeter, white; very early.

Salt Creek. (Doan.) A variety of *Vitis doaniana* found by Munson in Greer County, Oklahoma; stamens reflexed; small bunch with medium-sized black berry; early; an excellent graft stock.

Saluda. Noted in *United States Patent Office Report* for 1860 as very vigorous; blue, large; juicy, somewhat pulpy.

Salzer Earliest. (Lab.) From John A. Salzer, La Crosse, Wisconsin, in 1892. Very hardy, prolific; resembles Concord in type but of better quality; early.

Samuels. (Vin.?) A cross between a Vinifera and a native Texas species; exhibited by Bruni & Brother, Laredo, Texas, at the Columbian Exposition in 1893. Bunch large, compact, much compounded; berries medium, white; skin adherent; flavor not high.

Sanalba. (Rot. Linc. Lab. Vin. Bourq.) A cross of San Jacinto and Brilliant; from Munson, about 1906. Said to be very vigorous, prolific; cluster larger than Scuppernong; berry large, white, rich in sugar, tender, of good quality; skin thin.

Sanbornton. (Lab. Vin.) *Sanborton.* Purchased for an Isabella by Dr. Carr, of Sanbornton, New Hampshire, in 1826. Said to resemble Isabella except that it has rounder berries and ripens earlier.

San Jacinto. (Rot. Linc.) A seedling of Scuppernong crossed with a Lincecumii hybrid; from Munson, about 1898. Medium in vigor, prolific, healthy; stamens reflexed; bunch small, irregular, very loose; berry large, black, of fair quality; ripens two to three weeks after Scuppernong.

Sanmelaska. (Rot. Linc. Lab. Vin. Bourq.) A hybrid of San Jacinto and Brilliant; from Munson, about 1906. Said to be very vigorous, prolific; bunch three times as large as Scuppernong; berry about same size, sweeter, black.

Sanmonta. (Bourq. Rip. Linc.) A seedling of San Jacinto crossed with Herbemont; from Munson, about 1906. Vigorous, very prolific; bunch above medium; berry black; very juicy, melting, sprightly; skin thin; seeds small.

Sanrubra. (Rot. Linc. Lab. Vin. Bourq.) A cross between San Jacinto and Brilliant; from Munson, about 1906. Very vigorous, productive; cluster medium; berry not quite as large as Scuppernong but more persistent; melting, sweet, of good quality; skin thin, tough.

Santa Clara. (Vin. Lab. Bourq.) A seedling of unknown parentage, probably Delaware; from J. B. Tuckerman, Cassville, New York, first fruited in 1900. Lacks vigor; strongly Vinifera in vine characters; tendrils intermittent; stamens upright; flowers sterile; clusters usually single-shouldered; berries small, roundish, light green with thin gray bloom, persistent, rather soft; fair in flavor and quality; skin nearly thin, tender.

Saxe White Seedling. Found in Catskill Mountains by W. H. Saxe, Palenville, New York, about 1900. Vigorous, hardy, productive; ripens a little before Early Ohio.

Schenck White. Noted in *Grape Culturist*, 1871, as "supposed to have come from Germany about 1790."

Schiller. (Bourq.) A seedling of Louisiana; from Frederick Muench, Marthasville, Missouri. Vigorous, hardy, healthy, productive; bunch below medium; berries medium, purplish-blue.

Schmitz Seedling. (Lab. Vin.) Noted in *Magazine of Horticulture* for 1853 as a seedling grape from Gerhard Schmitz, Pennsylvania. Resembles Isabella closely but may be a little earlier.

Schoonemunk. (Lab.) *Skunnymunk.* A native seedling found by W. A. Woodward, Mortonville, Orange County, New York, about 1860, named after a neighboring mountain. Said to be hardy, productive; fruit equal in size and flavor to the Concord; earlier in ripening.

Scott. Noted by Prince in 1830 as a native North Carolina grape found by Gen. John Scott of the same state. Berries medium, round, white, amber when ripe; juicy, of good flavor; ripen late.

Secunda. (Linc. Lab. Vin. Bourq.) A seedling of Early Purple crossed with Brilliant; from Munson, about 1896. Stamens reflexed; bunch medium; berry large, red; early.

Seedlin. (Rot.) Noted in *South Carolina Station Bulletin No. 132*, 1907, as medium in vigor, very productive; flowers perfect; bunches contain three to six reddish-black berries; pulp tender, juicy, slightly acid, of good quality; skin thick.

Selma. (Rip. Lab.) A seedling of Elvira probably crossed with Concord; from G. Segessman, Amazonia, Missouri; first mentioned about 1890. Hardy, productive, healthy; bunches large, perfect, shouldered; berry medium, round, black, adherent; juicy, sprightly, pleasant flavored; skin thick; ripens a few days after Moore Early.

Seneca. (Lab.) A seedling of Hartford; first exhibited at Hammondsport, New York, in 1867 by R. Simpson, Geneva, New York. Similar to its parent.

Seneca. (Lab. Vin.) From John Burr, Leavenworth, Kansas; mentioned in *Missouri Horticultural Society Report* in 1892. Very vigorous, not quite hardy, healthy, productive; bunch large, compact; berry large, red, with slight bloom; tender, juicy, sprightly, sweet, of Catawba flavor; skin thin, tough; ripens after Concord.

Septimia. (Linc. Vin. Lab. Bourq.?) From Munson, in 1897; a cross between Early Purple and Carman. Stamens erect; bunch large with medium-sized, black berries; late.

Seward. A seedling from S. V. Smith, Syracuse, New York; exhibited as a new variety before the Massachusetts Horticultural Society in 1880. Bunch medium, compact, frequently shouldered; berry large, round, color of Catawba; sweet, juicy, rich, not adherent; skin medium thick.

Shala. (Linc. Rup. Lab.) A seedling of America crossed with Beacon; from Munson, in 1899. Vigorous, prolific; stamens upright; clusters large; berry large, black, tender, juicy, delicious; skin thin, tough; ripens about with Concord.

Sharon. (Lab. Vin.?) A seedling of Adirondac; introduced by D. S. Marvin, Watertown, New York. Resembles its parent but is sweeter, hardier, more reliable; ripens at the same time.

Sharp Beak. (Rup. Rip. Lab.) From Munson; parents, *Vitis rupestris* crossed with Elvira. Stamens reflexed; cluster and berry small, black; early.

Shelley Seedling. A seedling from Daniel Shelley, Cumberland County, Pennsylvania, exhibited in 1879. Fruit medium in size, of Catawba color and of very good flavor.

Sheppard Delaware. (Lab. Vin.) Noted by Downing in 1869 as a seedling of Catawba from J. N. Sheppard, in 1853. The vine and fruit are similar in all respects to Delaware.

Shepperd. (Lab.) A seedling from E. W. Bull, Concord, Massachusetts; exhibited in 1874 before the Massachusetts Horticultural Society. Bunch and berry medium, black, not adherent.

Sherman. (Rip.) Resembles Lyman in most characters and by some considered synonymous. Poor bearer; stamens imperfect; ripens earlier than Hartford.

Sheruah. (Linc. Rup. Lab. Vin.) A seedling of America fertilized by R. W. Munson; from Munson, in 1899. Described by originator as "vigorous and prolific; cluster very large; berry large, black and handsome; skin thin and tough; pulp tender, juicy, delicious; medium late season." Resembles Concord in type of cluster and general appearance but is superior in the texture and flavor of the pulp.

Shull No. 2. (Lab. Vin.) A chance seedling of unknown parentage; from J. Shull, Ilion, New York, about 1892. Very vigorous, healthy, productive; stamens long; clusters medium to large, compact, cylindrical; berry medium, roundish-oblong; skin thin, tender, pale green covered with thin bloom; pulp tender, releases seeds readily, sweet; good but not equal to Winchell; early.

Shurtleff Seedling. *Lilac.* A chance seedling, probably from a foreign grape, found in the garden of Dr. S. A. Shurtleff, of Pemberton Hill, near Boston, in 1822. Bunches large, shouldered; berries nearly large, oval; skin thick, light purple or lilac,

with a spotted appearance, grayish bloom; pulp firm, sweet, rich; very good; ripens early in September.

Siglar. Mentioned in the *Gardener's Monthly*, 1869, as a new variety resembling Delaware but with fruit twice as large. Comparatively hardy, productive; rich and sweet.

Silkyfine. (Lab. Rip. Vin.) A cross of One Seed with Rommel; from Munson, in 1898. Stamens erect; bunch medium; berry large, white; late.

Silvain. (Doan.) A wild staminate variety of *Vitis doaniana* found in Greer County, Oklahoma, by Munson. It furnishes an excellent graft stock.

Silver Dawn. (Vin. Lab.) A seedling of Israella fertilized with Muscat Hamburg, of the same lot of seed as Early Dawn; from Dr. Wm. A. M. Culbert, Newburgh, New York, about 1877. Vigorous, hardy; white; best.

Sinawissa. Noted in the *Wisconsin Horticultural Society Report*, 1876, as a grape of delicious flavor but not to be recommended for general cultivation.

Sloe. (Rot.) A variety of *Vitis rotundifolia* which, according to Prince, 1830, "is probably the original vine whence the improved varieties of its race have emanated, but inferior to all the others. The fruit is sour and scarcely eatable, and of a dark purple or black color."

Small Leaf. (Rup.) A wild variety of *Vitis rupestris* found by Munson in Texas. Stamens reflexed; cluster very small; berry small, black; very early.

Smallwood. A native of North Carolina; from E. Smallwood. According to Prince, 1830, the fruit is about half the size of the Muscatel, and is much esteemed for making wine.

Snelter. Mentioned by Mitzky, 1893, as a seedling of Riparia crossed with Concord; from L. Snelter, Carver, Minnesota.

Snowflake. (Lab. Bourq. Vin.) According to *Bushberg Catalogue*, 1894, a seedling of Jewel, from Dr. J. K. Stayman. Vigorous, hardy and productive; bunch medium, compact; berry large, white; tender but firm, juicy, sprightly, vinous, sweet; of very good quality; ripens about with Concord.

Solander Large Purple. According to Prince, 1830, a variety highly esteemed in Missouri, from which place it was received by him.

Solrupo. (Long. Linc. Rup.) A cross between *Vitis longii* and a seedling of Lincecumii crossed with Rupestris; from Munson. Stamens reflexed; bunch and berry small, black; early.

Somerville. A large-berried variety, growing in the vineyard of Sidney Weller, Brinkleyville, North Carolina, in 1845.

Sophia. (Lab. Vin.) A seedling of Concord fertilized with Iona; from D. J. Piper, Forreston, Ogle County, Illinois, about 1880. Equal to Concord in hardiness, very productive; clusters compact; berries having the rich vinous nature of the Iona and the sweetness of the Concord; ripens with Concord and is a good keeper.

Souland. (Rip.) Mentioned in the *Illinois Horticultural Society Report*, 1868, as a good winter grape, resembling Clinton; exhibited by John H. Tice before the Mississippi Valley Grape Growers' Association in that year.

South Carolina. According to Warder, 1867, from Ohio. Vigorous; bunch large; berry small, black; juicy, spicy; very promising.

Southern Champion. Exhibited by Stephen H. Shallcross of Louisville, Kentucky, at the fruit show of the Southern Exposition in Louisville.

Spencer. (Vin. Lab.) *Wells; Wells White.* Noted in the *United States Patent Office Report*, 1861, as an accidental cross between Sweetwater and Isabella.

Spinosa. (Lab.) A wild variety of *Vitis labrusca* from North Carolina; collected by Munson. Stamens reflexed; bunch very small; berries large, black; mid-season.

Spotted Globe. According to Fuller, 1867, a hybrid from Jacob Moore, Rochester, New York. Very feeble; flesh sweet, very tender; good.

Springfield. (Lab.) According to *Bushberg Catalogue*, 1894, a seedling of Northern Muscadine; from W. H. Lightfoot, Springfield, Illinois. Strong, healthy and hardy; bunch medium to large, very compact; berries large, reddish-brown becoming dark brown when fully ripe; pulpy yet juicy and very sweet; ripens about a week before Concord.

Stace White. (Lab. Vin. Bourq.) An unnamed seedling from S. Stace, Barnard Crossing, Monroe County, New York. A cross between Delaware and Isabella; the vine closely resembles Rebecca in foliage, habit and fruit.

Stelton. (Lab. Vin.) From W. Thompson, of New Brunswick, about 1882. Bunch large, shouldered, rather loose; berries medium, greenish-white with white bloom; pulp juicy, sweet; ripens with Concord.

Sterling. (Lab. Vin.) From E. P. Fisher, Sterling, Kansas, about 1904. Moderate grower, healthy and hardy; bunch small to medium, irregular in shape; berry large, round, ripens with Concord; good keeper.

Stetson's Seedlings. From Amos Stetson, of East Braintree, Massachusetts, about sixty years ago.

No. 1. See Cabot.

No. 2. (Lab. Vin.) A red native Labrusca crossed with Grizzly Frontignan. Berries nearly white, with a little tinge of blush.

No. 3. (Lab. Vin.) A native red Labrusca fertilized by Grizzly Frontignan. Resembles *No. 2* but has larger berries.

No. 4. (Lab. Vin.) A red native Labrusca crossed with Black Hamburg. Ripens early in September, fourteen days sooner than Isabella.

No. 5. (Lab. Vin.) A cross between a native red Labrusca and Sweetwater. Resembles Sweetwater very closely; color dark blue.

Storm King. (Lab.) A sport of Concord; from E. P. Roe, Cornwall-on-Hudson, New York. Resembles its parent in all respects except that the berries are about twice as large and are less foxy.

Strawberry. According to Cole, 1849, from Col. L. Chase, Cornish, New Hampshire. Bunch and berry small; pleasant, sub-acid flavor.

Striped Ruby. *Munson's No. 13.* One of Munson's seedlings on trial at the Virginia Experiment Station in 1893.

Success. (Linc. Rup. Bourq.) Parentage, Post-oak, Rupestris and Bourquiniana; from Munson. Noted in the *Rural New Yorker* for 1901. Very vigorous and highly prolific; cluster size of Concord, compact; berries variable in size from small to above medium; skin thin, tough; very sweet and rich, of the best quality.

Sugar Grape. (Lab.) A wild variety of *Vitis labrusca;* grows in great abundance near Plymouth, Massachusetts. Growth moderate, short-jointed; healthy; bunches and berries of medium size, round and flat; very sweet.

Sugar Grape. (Rot.) A variety of the Scuppernong family, cultivated by L. Froelich, of Enfield, Halifax County, North Carolina. Mentioned in the *United States Department of Agriculture Report*, 1871, as having a saccharine strength of 80°.

Summer White. (Lab.) Mentioned in the *Magazine of Horticulture*, 1854, as having been found wild; ripens the last of July and in August and September; decidedly superior to Isabella.

Sumner. Noted in the *American Horticultural Annual* for 1871 as a seedling raised by P. Stewart, of Mt. Lebanon, New York.

Sunrise. (Lab. Vin. Bourq.) From Jos. Bachman, Altus, Arkansas, about 1897; seedling of Brilliant. Described by the originator as a strong grower; bunches rather open; berries red; skin tender; best; ten days to two weeks earlier than Delaware.

Superior. (Lab. Vin. Bourq.) A seedling of Jewel; from John Burr of Leavenworth, Kansas, about 1890. Vigorous, hardy, healthy and productive; stamens upright; bunch medium, moderately compact; berry medium, black with heavy bloom; skin thin, tough; pulp tender, rich, sweet, vinous, sprightly; very good; ripens a few days later than Jewel.

Supreme. (Lab. Vin. Bourq.) A Delaware seedling; from John Burr, of Leavenworth, Kansas, about 1890. Variable in vigor and productiveness, hardy, healthy; stamens upright; cluster medium, usually compact; berry medium, black; tender, sweet, sprightly, vinous; quality better than Jewel and about a week earlier.

Swatara. From Pennsylvania; according to *Horticulturist*, 1858, this variety was discovered many years ago in a ravine through which the Swatara River flowed. Bunch and berry below medium size, compact; sweet; early.

Sweetey. (Linc. Bourq.) *Munson's No. 111.* A seedling of Lincecumii fertilized with Herbemont; from Munson. Very vigorous, tender, a shy bearer; stamens upright; bunch medium, compact, shouldered; berry small, round, dark purple or black with heavy bloom; skin thin, tender; pulp large and tough; rather poor quality; a few days earlier than Concord.

Taft. Given by Prince in a list of worthless varieties in *Gardener's Monthly*, 1863.

Talala. (Lab. Rip. Cand. Vin. Bourq.) A cross between Elvicand and Brilliant; from Munson. An attractive compact bunch with large red berries of rather tough pulp; not high quality.

Talequah. (Bourq. Rup. Linc.) A seedling of America crossed with Herbemont; from Munson, about 1895. Clusters large, conical; berries medium, dark red; skin thin, tough; without pulp, melting, juicy; nearly as good as Delaware; late.

Tamala. (Lab. Vin. Bourq.) A seedling of Delago crossed with Governor Ross; from Munson; first fruited in 1899. Moderately vigorous; stamens erect; bunch and berry medium, yellowish-white; good; ripens mid-season in Texas.

Tekoma. (Lab. Vin.) Noted in the *American Horticultural Annual*, 1870, as a Missouri seedling of Catawba, more healthy than that variety.

Tenderpulp. (Rot.) A Rotundifolia, originated about 1870. Vigorous, very productive; stamens reflexed; berries medium, black, in clusters of four to twelve; skin tough; pulp tender, juicy, sweet; poor; ripens about a month after Scuppernong.

Ten-Dollar-Prize. (Linc.) A wild Post-oak grape found by a Mr. Hopkins, of Texas, about 1883. Used by Munson as one of the parents in a number of his crosses.

Tennessee. Noted as on trial in the government experimental garden in 1860.

Tennessee Island. A wild grape growing in great abundance on the islands in the Tennessee River. Very similar to Scuppernong and Prince says "it is quite probable it may be the genuine Scuppernong."

Texas. (Linc.) *Diverse Leaved.* A variety of grape received by Prince about 1830 from the border of Texas with leaves very variable in form; produces a great abundance of very good grapes.

Texas. (Linc.) According to Prince, 1830, "a large, slightly reddish fruit, very juicy, sweet, with little or no pulpy coherence."

Texas. (Bourq.) *Munson's No. 181.* A Herbemont seedling; from Munson of Texas. Variable in vigor; stamens upright; bunches small, compact; berries small, black; good; ripens with Herbemont.

Texas Highland. (Linc. Vin. Lab.) *Munson's No. 130.* A seedling of Post-oak crossed with Agawam; from Munson, about 1885. Vigorous, not very productive; stamens erect; bunch medium, loose; berries medium to large, black; juicy, rich and pleasant; late.

Themis. (Lab. Vin.) A seedling of Salem; from C. Engle, Paw Paw, Michigan. According to *Bushberg Catalogue*, 1894, a strong grower, hardy, productive; bunch medium, short, compact, sometimes shouldered; berries large, Catawba-colored; meaty, firm; good; ripens with Worden. Considered by some same as Metis.

Theodosia. (Lab.? Rip.?) A chance seedling originating on the grounds of E. S. Salisbury, Adams, New York, in 1862. Hardy and productive; bunch medium, very compact, usually shouldered; berries medium, black; juicy, quite tart; very early.

Theophile. (Lab.) From Theophile Huber, Illinois City, Illinois. Bunch medium, compact, sometimes shouldered; berry large, yellowish-white; pulp tender, juicy, sweet, vinous; very good; ripens before Concord.

Thomas. (Rot.) A variety of Rotundifolia discovered in the woods near Marion, South Carolina, by Drury Thomas, about 1845. Vigorous, very productive; stamens erect; berries growing in clusters of from four to ten; very large; skin thin, varies in color from a reddish-purple to a deep black; pulp tender, sweet, vinous; good to very good; ripens about with Scuppernong or a little earlier. One of the best of this species for wine.

Thompson's Seedlings. The following seedlings were originated about twenty years ago by Jos. T. Thompson of Oneida, New York:

No. 2. (Lab.) A seedling of Brighton, resembling it very closely, fully equal in quality and, so far as tested, earlier and a better keeper.

No. 3. A white grape of unknown parentage.

No. 4. A chance seedling; early, black and large.

No. 5. (Lab. Vin.) A seedling of Worden and fruit somewhat of the same type. Clusters medium, loose; berries nearly large, roundish, reddish-purple with thin bloom; skin thin, tough; pulp rather tough, juicy, sweet, not foxy; good; stamens reflexed; shows Vinifera; late.

No. 7. (Lab. Vin.) A seedling of Agawam. Vigorous, healthy; clusters nearly large, compact; berries medium to large, round; skin thick, tough, dull dark red with blue bloom; pulp sweet, rather tough, vinous; good; late.

Thompson's Seedlings. A large number of seedlings were raised by David Thompson, of Green Island, in the Hudson River, near Troy, about forty years ago. Nearly all are of Vinifera parentage and consequently of little value for open vineyard culture. Among his named seedlings are: David Thompson, General Grant, L. H. Tupper, Nathan C. Ely, A. B. Crandall, Bonticue, Early August, William Tell, Lavina, Elenor, Jas. M. Ketchum.

Thompson Red Seedling. According to *Grape Culturist*, 1869, from a Mr. Thompson, originator of the Missouri Mammoth blackberry, said to be a Concord seedling but bears a strong resemblance to some of Rogers' hybrids.

Thompson Wine. (Lab. Vin.?) Received by the *Magazine of Horticulture* in 1865 from Mr. R. O. Thompson, of Nebraska. Bunch and berry resembling Isabella in shape; black.

Tishomingo. (Lab. Vin. Bourq.) A seedling of Delago crossed with Governor Ireland; from Munson, about 1899. Stamens erect; bunch medium with large black berry; ripens mid-season.

Togni. (Aest.) A seedling of St. Augustine cultivated in Florida about thirty years ago.

Tonkawa. (Lab. Vin. Bourq.) A seedling of Delago crossed with Brilliant; from Munson, of Texas, about 1899. Vigorous, nearly hardy, productive; stamens upright; clusters medium, rather slender, shouldered, variable in compactness; berries not uniform in size, oval, dull dark red with lilac bloom; skin moderately thick and tough; pulp slightly tough, vinous, sweet; good; ripens with Concord.

Transparent. (Rip. Lab.) A Taylor seedling; from Jacob Rommel, of Missouri, about 1880. Vine vigorous, healthy, moderately productive; stamens upright; bunch small, compact, shouldered; berry very juicy, sweet; good; ripens a few days before Concord.

Trask. (Lab. Vin.) The *Bushberg Catalogue* says, "a chance seedling that first fruited in 1875. Introduced by Peter Henderson and Company. Healthy; leaves smooth; bunches large, long, often shouldered; berries medium to large, brown or bluish-black; tender, melting, very sweet, vinous; ripens before Concord.

Triumphant. A failure at the Ontario Experimental Farm where it was tested in 1886.

Trollinger. Mentioned in *United States Patent Office Report* for 1859 as being on trial in the government experimental garden.

Trowbridge. (Lab. Vin.) According to *American Horticultural Annual*, 1870, a sport from the Isabella with much larger bunches and berries than those of its parent.

Troy. (Lab. Vin.) *Purple Hamburgh* of Troy; *Troy Hamburg*. Described by Prince in 1830 as hardy, vigorous, productive; berries large, oval, a little foxy, pleasant; very good; similar to Isabella.

Tryone. (Lab Rip. Vin. Bourq.) From a cross by Munson between One Seed and Rommel, about 1897. Stamens erect; bunch and berry large, white; very late.

Tuckerman. From J. B. Tuckerman, Cassville, Oneida County, New York, about 1870. A white grape.

Tuskahoma. (Lab. Vin. Bourq.) A member of Munson's Delago family, the male parent being Brilliant; first fruited in 1899. Stamens erect; bunch and berry large, translucent red; equal to Brighton in quality; early.

U. B. One of Marine's seedlings; a black grape, of Labrusca type.

Uhland. (Rip. Lab.) A seedling of Taylor; from Wm. Weidmeyer, Hermann, Missouri. Vigorous, hardy, healthy, usually a shy bearer; stamens erect; bunch medium, nearly cylindrical, compact, sometimes shouldered; berry medium, slightly oblong, greenish-yellow with thin bloom; skin thin, tender, cracks; pulp tender, juicy, sweet, pleasant; good; ripens a few days later than Concord; subject to rot in some sections; makes a very good wine.

Uller Mammoth. Reported by the Tennessee Experiment Station in 1894 as an exceedingly large grape of inferior quality; a vigorous vine.

Ulrey. Mentioned by Warder in 1867. From Indiana; medium bunch with large white berry; sweet, rich.

Una. (Lab.) A White Concord seedling; from E. W. Bull, about 1867. Healthy and vigorous; bunch and berries medium; resembles Martha but not so sweet and more foxy; ripens a week before Concord.

Underhill. (Lab.) *Underhill's Celestial; Underhill's Seedling.* A variety of the wild Fox grape; from Dr. A. K. Underhill, Charlton, Saratoga County, New York, about 1863. Of medium vigor, hardy, healthy and productive; stamens reflexed; bunches medium to large, cylindrical, frequently shouldered, moderately compact; berries large, usually roundish, dark dull red with lilac bloom, inclined to drop when ripe; skin thick, tough, very astringent; pulp tough, sweet, foxy, moderately juicy, fair; ripens about with Concord; of the Wyoming type but inferior to that variety.

Undine. (Lab. Rip.) From J. H. Ricketts; a seedling of Concord and Clinton; vigorous and healthy; bunch large, shouldered; berries large, yellowish-white when fully ripe; sprightly, very good.

Universal. (Linc. Lab. Rup.) A seedling of America crossed with Profusion; from Munson, about 1897. Stamens erect; bunch large with medium-sized black berry; equal to Concord in quality; very late.

Urbana. (Lab.) A seedling of Concord; from Indiana. Bunch medium, shouldered; berry large, white; juicy, vinous, not very sweet; ripens about with Isabella.

Ursula. (Lab.) According to Mitzky, 1893, "produced by T. Huber, Sr., Illinois. Bunch small, compact; berries small, white; flesh melting, juicy and sweet; fine quality; vigorous grower; ripens with Concord."

Valencia. Grown by Munson from seed secured in South Spain, near Valencia. Described by the originator as vigorous, short-jointed; healthy, a light cropper; cluster small, shouldered, very compact; berry small, brownish-red; pulp melting, juicy, very sweet and fine. Munson gives the species as Bourquiniana.

Valentine. *August Isabella.* Mentioned by Prince in *Gardener's Monthly* for 1863.

Valhallah. (Lab. Cand. Rip. Vin. Bourq.) From Munson, about 1902; a hybrid of Elvicand and Brilliant. Described by the originator as a very vigorous, drouth-enduring, prolific vine; cluster medium; berry large, bright clear red; skin thin, tough; pulp juicy, tender, nearly equaling Brilliant in quality; ripens about with Concord.

Valverde. (Champ. Lab. Vin. Bourq.) From Munson; a seedling of De Grasset fertilized with Brilliant. Stamens erect; bunch and berry large; ripens mid-season in Texas.

Van Deman. (Linc. Lab. Vin.) From Texas; a cross of Lincecumii and Triumph. Vigorous; stamens erect; bunch medium, compact; berry medium, black; poor to good; ripens about two weeks after Catawba.

Vanderburgh. Noted in *Record of Horticulture* for 1868 as a new and promising variety from Lansingburg, New York; not yet sent out.

Venango. (Lab.) *Minor's Seedling.* According to Buchanan (Mss.), an old variety, said to have been cultivated by the French at Fort Venango, on Allegheny River, over a century ago. Very vigorous, hardy, healthy and usually productive; stamens erect; bunch medium, compact; sometimes shouldered; berries medium, round or sometimes flattened by compactness; skin thick and tough, pale red with white bloom; flesh sweet, aromatic; pulpy and foxy; ripens about with Concord.

Vermont. Listed by Prince in *Gardener's Monthly*, 1863, as a worthless sort.

Vermont Giant. (Lab.) From C. G. Pringle of Charlotte, Vermont. Noted in the *Western New York Horticultural Society Report*, 1882, as a black, very pulpy grape with poor flavor.

Vermorel. (Champ.) A wild variety of *Vitis champini* from Williamson County, Texas; collected by Munson. Stamens reflexed; bunch small with medium-sized black berry; early.

Vesta. (Lab. Vin.) A seedling of Salem; from C. Engle, Paw Paw, Michigan. Vigorous, hardy, productive; stamens upright; bunches medium to large, long, shouldered, moderately compact; berries large, round, greenish-white; skin thin, tough; pulp tender, juicy, vinous, rich; very good; about a week later than Concord.

Viala. (Champ.) A wild variety of *Vitis champini*, from Coryell County, Texas; collected by Munson. Stamens reflexed; bunch small; berry medium, black; early.

Vialla. (Rip.) According to *Bushberg Catalogue*, 1883, "a Franco-American variety, recommended as a grafting stock; resembles the Franklin and is by some supposed to be the same variety; others contend that it is distinct from and superior to Franklin."

Victoria. Origin unknown. Moderately vigorous, open, healthy; bunch very small, short and thick; berry large, round, dark purple, scarcely black, with thin bloom; skin tender; pulp tender but stringy, juicy, mild acid, without decided character; poor; about a week later than Concord.

Victoria. (Lab.) *Ray's Victoria.* Introduced in 1872 by M. M. Samuels, of Clinton, Kentucky. Vigorous, healthy, and productive; bunch medium; berry medium, round, amber color; skin thin; pulp tender, sweet and of high flavor; very good; resembles Venango.

Vine Arbor. Mentioned in the *United States Patent Office Report*, 1845, as being grown at Brinkleyville, Halifax County, North Carolina, at that time. So called on account of its very large leaf and extended growth, consequently adapted for arbors.

Vinita. (Linc. Bourq.) A seedling of Post-oak crossed with Herbemont; from Munson, about 1885. Very vigorous, productive; stamens erect; bunch large, conical, shouldered, compact; berries small to medium, purple; skin thin, tough; pulp juicy, melting; "best"; very late.

Vinrouge. (Lab. Aest. Vin. Bourq. Rup. Linc.) From a cross between America and Laura; by Munson about 1894. Vigorous, healthy; stamens erect; bunch large; berry medium; black; early.

Virginia. Noted by Buchanan, 1852, as a grape raised and exhibited by N. Longworth in 1846.

Vivie Hybrid. *Vivie's Hartford.* According to *Bushberg Catalogue*, 1883, "produced by M. Vivie in France, and by some called Vivie's Hartford. Of very vigorous growth, very productive and its grape of good quality making a very good wine."

Waddel. (Lab.) Noted in the *United States Department of Agriculture Report* for 1893. Found in the woods of Highland County, Ohio, about 1863, by John F. Waddel. Productive and hardy; cluster medium, heavily shouldered, moderately compact; berry oval, medium to large, persistent; skin thick, tender, dark purple or black with heavy blue bloom; pulp translucent, tender, melting, very juicy, mildly sweet, rich, pleasant with slightly musky aroma; good to very good; season September 20–30th in Ohio.

Waldo Seedling. (Lab.) A chance seedling found on the farm of J. B. Waldo, Johnsville, Dutchess County, New York, about 1881. Of medium vigor, healthy, hardy, productive; clusters as large or larger than Concord, often nearly double, somewhat loose; berries large, black with abundant blue bloom; skin variable in thickness, tender; pulp moderately sweet, juicy, slightly foxy with Concord flavor; good; ripens a little before Moore Early. Resembles Concord closely.

Wales. (Lab.) A seedling having a medium-sized bunch, exhibited by E. W. Bull at the meeting of the Massachusetts Horticultural Society in 1874.

Waneta. (Lab. Vin. Bourq.) A seedling of Delago crossed with Brilliant; from Munson, about 1896. Stamens erect; bunch medium with large red berry; equal to Brighton in flavor; late.

Warmita. (Linc. Rup. Lab.) From a cross between America and Beacon; by Munson, about 1896. Healthy and vigorous; stamens erect; bunch and berry large, black; ripens mid-season.

Warren. Supposed by some to be identical with Herbemont but claimed to be distinct by others. The original vine grew near Warrenton in Warren County, Georgia.

Washington. Noted by Warder in 1867. From New York. Early, black.

Washita. (Lab. Vin. Bourq.) A seedling of Delago crossed with Governor Ireland; from Munson, about 1896. Stamens erect; bunch medium with large, black berry, equal to Concord in flavor; early.

Washita. A white grape from Arkansas; on trial in the goverment experimental gardens in 1859.

Waterloo. *Rock House Indian.* A native grape from Illinois, grown by F. Muench. Vigorous and a good bearer; cluster and berry small.

Watertown. From D. S. Marvin, Watertown, New York. According to Mitzky, 1893, a good grower; bunch medium, sometimes shouldered; berry medium, slightly oblong, white; sweet; fine quality.

Watova. (Lab. Rip. Vin. Aest.) A cross between Gold Coin and Rommel; from Munson, in 1899. Stamens erect; bunch and berry large, yellow; late.

Waubeck. (Linc. Lab. Aest.) A seedling of *Jaeger No. 43* fertilized with Laussel; from Munson, about 1893. Stamens erect; bunch large; berry medium, black, equal to Concord in flavor; very late.

Waverly. (Vin. Rip. Lab.) A seedling of Clinton and one of the Muscats; from Jas. H. Ricketts, about 1870. Usually vigorous and productive, hardy, healthy; bunch medium, shouldered, compact; berry medium, round to oval, black with blue bloom; pulp tender, juicy, sweet, vinous; good; ripens with Brighton.

W. B. Munson. (Linc. Vin. Lab.) A seedling of Post-oak No. 3, crossed with Triumph; from Munson, about 1887. Vigorous, very productive, subject to mildew in the South; stamens erect; bunch medium or sometimes large, cylindrical, compact, sometimes shouldered; berry medium, round, black, persistent; pulp juicy, melting, sprightly; very good; late.

Webb Grape. Mentioned by Prince in 1830. Discovered by Samuel Webb, of Philadelphia, near Woodbury, Pennsylvania. Berries large, black.

Weeks Seedling. Mentioned in the *American Horticultural Annual*, 1871. Raised by Dr. Cyrus Weeks, of Bellville, New Jersey. Medium bunch and berry; very sweet; pleasant flavor.

Wells. (Lab.) *Wells' Seedling.* Originated in Ohio where it was discovered by a Mr. Wells about 1882. Vigorous, healthy, very productive; clusters large, cylindrical, shouldered, moderately compact; berries large, bronze or wine-colored, oval; pulp tender, mild, very juicy with a peculiar musky flavor and foxy aroma: fair quality; ripens about two weeks after Concord.

Western Beauty. Grown from mixed seed by E. P. Fisher, Sterling, Kansas, about 1904. Described by the originator as a black or purple grape of superior quality, better than Concord, a stronger grower than that variety and perfectly hardy; ripens about with Catawba.

Wetumka. (Lab. Aest. Rip. Bourq.) From a cross by Munson between One Seed and Gold Coin, about 1893. Of medium vigor, healthy, productive; stamens erect; clusters medium, ovate, moderately compact, sometimes shouldered; berries large, globular, yellowish-green; pulp juicy, tender; good; ripens after Concord.

Wewoka. (Linc. Rup. Lab.) Produced by Munson, about 1893, by crossing America with Beacon. Stamens reflexed; bunch very large; berry large, black; late.

Wheaton. (Lab. Bourq. Vin.) A seedling of Delaware; from John C. Wheaton, of Dansville, New York, in 1873. Rather weak grower, hardy, variable in productiveness; tendrils irregularly continuous; foliage not very healthy; stamens upright; flowers nearly fertile; clusters medium to small, much like Delaware, cylindrical, nearly compact, sometimes shouldered; berries small, roundish, light green with yellow tinge, with thin gray bloom; pulp tender, nearly sweet; good; ripens about with Delaware.

White Ann Arbor. (Lab.) *Ann Arbor.* A seedling of Concord; raised by Chas. H. Woodruff, of Ann Arbor, Michigan, in 1870. Of medium vigor, very hardy, moderately productive; bunch and berry large, white with white bloom; pulp tough, sweet; good; ripens about two weeks before Concord.

White Beauty. (Lab. Vin. Bourq.) A seedling of Dutchess; from Stayman of Kansas. Very vigorous, hardy, healthy and very productive; bunch large, long, shouldered, compact; berries medium size, white; pulp tender, sprightly, rich, vinous, sweet; best; ripens with Concord and will hang until frost.

White Cape. (Lab. Vin.) According to Mitzky, 1893, similar to Alexander except that it is greenish-white in color.

White Catawba. (Lab. Vin.) A seedling of Catawba; raised by John E. Mottier, of Ohio, about 1849. Bunch medium, shouldered; berry large, round, greenish; pulpy, foxy.

White Clinton. *White Delaware.* Mentioned in the *United States Department of Agriculture Report* for 1864, as being a hardy and vigorous vine with a small white grape, insipid and worthless.

White Cloud. (Lab. Vin. Bourq.) A seedling of Dutchess; from Stayman, of Kansas. Vigorous, hardy, healthy and productive; clusters large, long, compact; berries large, white; skin thin, tough; pulp tender, juicy, rich, sprightly, vinous, sweet; best; ripens with Concord.

White Delaware. (Lab. Vin. Bourq.) From Geo. W. Campbell, of Delaware, Ohio. Lacking in size and productiveness as compared with its parent; resembles Delaware in form of bunch and berry, compact and shouldered; greenish-white with thin white bloom; early.

White Delaware. (Lab. Bourq. Vin.) According to *Bushberg Catalogue*, 1894, from Hermann Jaeger, of Neosho, Missouri; bunch and berries closely resemble the Delaware in shape and size but it has some Labrusca characteristics.

White Delaware. (Lab. Bourq. Vin.) Produced by Jacob Rommel of Morrison, Missouri. Described by Mitzky, 1893, as healthy, moderate grower, very productive; bunch medium, compact, shouldered; berry medium, white with white bloom; skin tough; without pulp, very sweet, pure flavor, delicious; ripens with Concord.

White Delaware. (Lab. Bourq. Vin.) From C. J. Copley, Stapleton, New York. Described in *Massachusetts Horticultural Society Report*, 1880, as having a small bunch, exceedingly compact; berries very small, round, green with an amber tint in the sun, thin bloom; skin very thick; sweet with not much pulp but pretty hard.

White Delaware seedlings have also been produced by John Burr, J. Sacksteder, Dr. J. Stayman, D. B. Woodbury and others.

White Elizabeth. *Hart's White; White Isabella.* Listed by Prince in *Gardener's Monthly* for 1863.

White English. Mentioned in the *United States Patent Office Report* for 1845 as being grown by Sidney Weller, Brinkleyville, North Carolina.

Whitehall. (Lab.) Supposed to be a chance seedling from Geo. Goodale, of Whitehall, Washington County, New York; first fruited in 1870. Of medium vigor, not very productive, comparatively healthy; stamens reflexed; clusters large, moderately compact, shouldered; berry medium, dark purple or nearly black with thin bloom; pulp tender, melting and sweet; ripens about with Hartford.

White Jewel. (Rip. Lab.) *Burr's No. 19.* A seedling of Elvira; supposed to be from John Burr, of Leavenworth, Kansas. Vigorous, hardy and very productive; stamens upright; bunch medium, long, compact; berry medium, round, white with abundant bloom; skin thin, rather tender; pulp very juicy, tender, sweet, sprightly, very good; ripens about with Moore Early.

White Mountain. From Connecticut; very early.

White Muscadine. Mentioned in the *United States Patent Office Report*, 1862, in a list of grapes that do well as far north as Burlington, Vermont.

White Musk. (Lab. Vin.) According to Fuller, 1867, a hybrid from Jacob Moore, of Rochester, New York. Vine resembles Sweetwater but does not require protection; of medium size with insipid flavor.

White Northern Muscat. (Vin. Lab.) *Culinary Grape; White's Northern Muscadine.* A seedling of Brighton fertilized with Muscat; from W. T. White, Troy, Ohio, about 1889. Vigorous, tender, moderately productive; stamens upright; bunch medium size, compact; berries large, nearly round, brownish-green or amber color; skin thick, tough; pulp large, tender, juicy, sweet; high flavor; about ten days earlier than Concord.

White Norton. (Aest. Lab.) A seedling of Norton; from F. Langendoerfer, Hermann, Missouri. Noted in *Missouri Horticultural Society Report*, 1883, as a slow grower, moderately productive, very hardy; smaller than its parent, of a golden yellow color and a few days earlier.

White Norton. (Aest. Lab.) *White Virginia Seedling.* Another Norton seedling, probably crossed with some Labrusca; produced by J. Balziger, Highland, Illinois. Strong, hardy; healthy and vigorous; fruit similar to Elvira but better in quality; very late; shows some Labrusca blood.

White Rose. Received at this Station for testing in 1906 from Miss R. R. Short, Clifton Springs, New York.

White Sugar. W. R. Prince in *Gardener's Monthly* for 1863, mentions this variety as a worthless Labrusca.

White Tennessee. According to *Grape Culturist*, 1871, grown by W. Valiant, of Clarksville, Tennessee, and known by him for about fifty years. Hardy, productive and free from disease.

White Ulster. (Lab. Vin.) According to *Bushberg Catalogue*, 1894, an amateur variety, raised by A. J. Caywood from a seedling of Ulster crossed with White Concord.

Wilcox. Mentioned in the *United States Patent Office Report*, 1845, as being grown by Sidney Weller, Brinkleyville, North Carolina.

Wilding. (Rip. Lab.) A seedling found by Jacob Rommel, Morrison, Missouri Vigorous, hardy and healthy, moderately productive; stamens reflexed; bunch medium, loose, shouldered; berry medium, round, pale green, almost transparent; skin very thin, and tender; no pulp, juicy, very sweet; very good; ripens with Concord.

Wilkins Seedling. (Lab.) From O. Fitzalwyn Wilkins, Bridgeburgh, Ontario, about 1895. Described in the *Canadian Horticulturist*, 1898, as follows: Bunch of good size and form; berries white, round, of medium size; skin thin and tender; pulp tender and separates readily from the seeds; flavor agreeable, somewhat foxy, but much sweeter and pleasanter than Concord; early.

Willard. (Lab.) From E. P. Fisher, Sterling, Kansas; received at this Station for testing in 1905. Described by originator as a vigorous, short-jointed grower, perfectly hardy, sometimes mildews; bunch a little smaller than Concord, compact; berry nearly large, round, red; sweet, without any foxiness; lacks vigor here; tendrils continuous or sometimes intermittent.

Williamson. (Cand.) A wild variety of Candicans from Williamson County, Texas; collected by T. V. Munson. Stamens reflexed; small bunch with very large, black berry; early.

Williamsport. Noted in the *Magazine of Horticulture*, 1860, as a new variety originated on the mountain near Williamsport, Pennsylvania. Perfectly hardy, and very prolific.

William Wine. (Lab. Aest.) Mentioned by S. J. Parker in the *United States Department of Agriculture Report* for 1864. Cluster small with long peduncle; berry large, round, having "the fox grape perfume mingled with that of a rose."

Willie. (Lab.) Said to be a seedling of Northern Muscadine crossed with Concord; from L. C. Chisholm, Spring Hill, Tennessee. Vigorous, rampant grower, healthy and very productive; fruit larger than Concord, shouldered, very showy; black with white bloom; pulp vinous and sprightly, no foxiness; excellent wine grape; ripens with or a few days later than Concord.

Willis. (Lab. Bourq. Vin.) A seedling of Delaware; from Willis W. Jones, Camargo, Illinois, about 1865. Usually vigorous, as hardy as Concord, healthy, generally quite productive; bunch medium, compact, shouldered, in shape like the Delaware; berry medium, round, pale green or amber-yellow with a slight bloom; pulp tender, very juicy, slightly vinous, sweet, foxy; good; early.

Willis Fredonia. *Guernsey Grape; Jersey Grape.* Origin unknown; grown by John Willis, of Maryland. According to Prince, 1830, a vigorous rampant grower, healthy, very productive; fruit black and pleasant for the table.

Willis Large Black. *Great Black Muscadine.* An old variety mentioned by Prince in 1830, who says, "according to a traditional account of the Southern Indians, this

vine and the White Scuppernong have been in bearing among them for more than five hundred years." Very vigorous; berries very large; foxy.

Wilmington. (Lab. Vin.) *Wilmington White.* Originated with a Mr. Jeffries, near Wilmington, Delaware, about 1856. Very vigorous, hardy, productive; bunches large, loose, shouldered; berries large, roundish or inclining to oval, greenish-white; tender and not pulpy, sweet and pleasant when properly ripened but requires a long southern season; late.

Winchester. (Lab. Vin.) *Brackett's Seedling; Brackett's Winchester.* A seedling of Union Village; from E. A. Brackett, Winchester, Massachusetts, first fruited in 1858. Vigorous, hardy; bunch large; berry large, round, black, heavy bloom; juicy, sweet, vinous; resembles parent but ripens a week earlier.

Windsor. Noted by Prince in 1830. Found growing wild twelve miles north of Baltimore, at Windsor, on the plantation of George Fitzhugh. Very luxuriant and productive; clusters large and long; berries round, blue, juicy.

Winedrop. (Linc. Bourq.) A cross between Post-oak No. 1 and Herbemont by Munson, in 1884. Stamens reflexed; bunch large with small, dark red berry; late.

Wine House. Noted in *United States Patent Office Report*, 1854. Found growing spontaneously in the vineyard of Frederick Muench. Sweet and aromatic; not very juicy.

Wine King. (Aest. Linc. Rup. Lab.) A seedling of Winona crossed with America; from Munson, in 1898. Very vigorous, prolific, healthy; stamens erect; cluster large, compact; berry medium, black with blue bloom; very little pulp, tender, very juicy, vinous, rich and sprightly; good.

Winona. (Aest. Lab.) A seedling of Norton; from Munson, about 1895. Vigorous, productive; stamens upright; cluster large, loose, conical; berries small to medium, black; skin thin, tough; pulp juicy, tender, good; about a week earlier than Norton.

Winslow. (Rip.?) A seedling raised by Charles Winslow, of Cleveland, Ohio, about 1857. Hardy and productive; bunch medium, long, compact; berries small, round, black; pulp vinous and juicy; resembles Clinton but is less acid; very early.

Winter Wine. (Simp. Linc. Bourq.) A cross between *Vitis simpsoni* and Marguerite by Munson in 1898. Stamens reflexed; bunch large with medium-sized black berry; "extra late."

Witt. (Lab.) A white seedling of Concord; from Michael Witt, of Columbus, Ohio, about 1880. Not very vigorous, hardy, moderately healthy, very productive; clusters medium to large, conical, moderately compact, sometimes shouldered; berries variable in size, usually large, roundish, greenish-white or pale yellow with thin whitish bloom; pulp tender, juicy, vinous, sweet; good; ripens with Concord or a little before.

Woodbury. (Lab. Bourq. Vin.) *Woodbury White.* A seedling of Delaware from D. B. Woodbury, Paris, Maine, about 1891. Described in *Bushberg Catalogue*, 1894, as resembling Delaware in growth and foliage; bunch medium, compact; berry larger than

Delaware, slightly oblong, greenish-white with fine bloom; skin thin, yet tough, almost transparent; juicy, sweet, good; ripens two weeks before Concord; a very good keeper.

Woodbury. Mentioned in the *United States Department of Agriculture Report* for 1863, as being on trial in the government experimental garden.

Woodcock Seedling. Exhibited by H. Woodcock at the Western New York Horticultural Society meeting in 1887. A large red grape, of very good quality; ripens with Delaware.

Woodford. On trial in the United States Department of Agriculture experimental vineyard in 1860. Vigorous; purple; pulpy, juicy, sweet.

Woodriver. According to *Bushberg Catalogue*, 1883, originated near Woodriver, Washington County, Rhode Island, by a Mr. Brown. White, very early, fine quality.

Woodson. From Prince Edward County, Virginia, previous to 1830. Bunch medium, very compact; berry medium red; no pulp, rich; good for table and wine; later than Cunningham.

Wyman. (Lab. Vin.) *Wyman's Seedling.* Exhibited by Joseph Breck in 1854 at a session of the fruit committee of the Massachusetts Horticultural Society. Said to be a seedling of Catawba; berries large, sweet and free of pulp; ripens with or before Isabella.

Wynant. (Lab. Vin.) According to Mitzky, 1893, a chance seedling grown by D. W. Babcock, Dansville, New York; almost identical with Dutchess.

Wyoming. Noted in the *United States Patent Office Report*, 1860. Vigorous; black; juicy, somewhat pulpy.

Wylie's Seedlings. Unnamed seedlings of Dr. A. P. Wylie, of Chester, South Carolina:

No. 4. A cross between two hybrids. Described by originator in *Bushberg Catalogue*, 1883, as bunch somewhat larger than Lenoir; berry medium, of a clear transparent golden color; finest texture and flavor, resembles White Frontignan; ripens as early as Concord.

Concord and Foreign No. 8. (Vin. Lab.) Seedling of Concord and Bowood Muscat. Strong grower; foliage Labrusca; cluster very large, loose; berry very large, black, of foreign texture; skin thick; ripens with Catawba.

Delaware and Concord No. 1. (Lab. Vin. Bourq.) Very hardy with Labrusca foliage; a great bearer; bunch and berry medium; skin thick, dark red; juicy, rich and sweet, slightly musky.

Halifax and Delaware No. 30. (Lab. Bourq. Vin.) The same color as Delaware with bunch of same size and berries one half larger; texture and flavor also much like Delaware; generally more healthy than that variety; a great bearer.

Halifax and Delaware No. 38. (Lab. Bourq. Vin.) Hardy and healthy with Labrusca foliage, not so strong a grower as *No. 30*; dark red in color with purple bloom and superior to *No. 30* in flavor.

Halifax and Delaware No. 49. (Lab. Bourq. Vin.) A black grape of high vinous flavor.

Halifax and Delaware No. 55. (Lab. Bourq. Vin.) Bunch medium, long, shouldered; berries large, dark blue or purple with a purple bloom; flesh tender, juicy, very sweet, sprightly, high flavored; best.

Halifax and Hamburg No. 11. (Vin. Lab.) Very productive and healthy; bunch medium; berry medium, black, with thick skin.

Hybrid Scuppernong No. 4. (Rot.) Exhibited at the American Pomological Society in 1877. Healthy, very productive; bunches medium, compact; berry round, greenish-white; pulp nearly melting, very juicy, sprightly, vinous, with a musky aroma; good.

Hybrid Scuppernong No. 5. (Rot. Vin.) Parentage, Bland Madeira and Foreign No. 1, crossed with a staminate hybrid Scuppernong produced by impregnating Black Hamburg with Scuppernong. Healthy and hardy; bunch medium; berries large, white, transparent with thin tough skin; almost pulpless, rich, sweet, with a peculiar flavor; as early as Concord.

Xenia. (Lab. Vin. Bourq.) Parentage, Delaware, Goethe and Triumph; from Munson. Vigorous; cluster medium, compact; berry very large, white; skin thin and tough; pulp meaty, tender, sprightly, high flavor; best; very late, with Fern Munson or just before.

Xlnta. (Linc. Rup. Vin. Lab.) One of Munson's seedlings; America fertilized with R. W. Munson. Vigorous, hardy in Southern States; stamens reflexed; cluster large, cylindrical, shouldered, fairly compact; berries medium to large, globular, black, with little bloom; skin thin; pulp meaty, tender, sprightly; season with or later than Concord.

Yoakum. (Bourq.) According to *Bushberg Catalogue*, 1894, "resembling the Herbemont, its juice is of deeper color, its foliage is more deeply lobed, but otherwise much inferior; ripening unevenly and being less productive."

Yomago. (Lab. Vin. Bourq.) A cross between Delago and Brilliant, by Munson, about 1894. As grown at this Station, a weak grower, not hardy, variable in productiveness; flowers fertile, bloom late; stamens upright; clusters large, usually single-shouldered, compact; berries large, roundish, black, glossy, covered with heavy blue bloom; skin thin and tender; flesh pale green, tender, spicy, sweet with Post-oak flavor; fair to good; it is doubtful if it will ripen in this locality.

Yonkers. (Lab.) A Concord seedling; from J. W. Gray, Atwood, Illinois. Hardy, not a strong grower; bunch medium, shouldered, compact; berries large, round, light green; sweet; good; ripens a little before Concord.

York Claret. (Lab.) According to Prince, 1830, a native cultivated near York, Pennsylvania, where it is much esteemed for wine. Bunches and berries smaller than those of Alexander; without pulp, very juicy, sweet.

York Lisbon. (Lab. Vin.) Noted by Prince in 1830. Grown around York, Pennsylvania. Resembles Alexander but larger and a little elongated and the pulp is more acid; coarse, pulpy and foxy; some consider it identical with Alexander.

York Madeira. (Lab. Vin.?) *Baldwin's Early; Black German; Canby's August; German Wine; Large German; Marion Port; Monteith; Shepherd's Port Wine; Small German; Tryon; Wolfe.* An old variety of Isabella type, originated at York, Pennsylvania. Vigorous, generally hardy, productive; cluster medium, compact, shouldered; berries medium, roundish, inclining to oval, black; pulp juicy, sweet, somewhat vinous, pleasant; ripens with Isabella or before. Some consider Marion (II) identical with this variety.

Young America. (Lab.) Raised by Samuel Miller, of Calmdale, Pennsylvania, about 1860. A seedling of Concord and resembling its parent in color and shape but three weeks later.

Zane. From a Mr. Zane, Wheeling, West Virginia; found by him growing wild on Wheeling Island. Berry medium, red.

Zelia. (Lab. Vin.) Parentage, Telegraph crossed with Black Hamburg; from C. J. Copley, Stapleton, New York. Medium in vigor, productive, quite hardy; leaves five-lobed, some indistinctly so, dull green; cluster large, compact; berry very large, black; skin thin, fine bloom; pulp tender, rich, sweet, aromatic; season earlier than Concord.

Zinnia. (Lab.) Origin unknown. Cluster large, loose, shouldered; berry medium, round, black with a rich bloom.

Zita. (Lab. Bourq. Vin.) A seedling of Delaware; from John Sacksteder, Leavenworth, Crawford County, Indiana. Vigorous, productive, healthy; cluster above medium; berry medium, round, yellow.

Zoe. Mentioned by Campbell in *Garden and Forest*, 1890, as a northern grape attaining its best quality in long seasons.

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In the standard works listed below, the date of copyright has been preferred to that of the title page although where there are several editions from the same copyright they are given, so far as our knowledge permits. This is thought to be more just to the writers as the copyright date is usually a better indication of the time when the book was written than the date of publication. An effort has been made to present a complete bibliography of grape literature in the United States including many books which, owing to their nature, have been of no use in the preparation of this work. In addition there are given all agricultural works and periodicals to which references will be found in the preceding pages. Reports and bulletins of experiment stations and reports of horticultural societies are not included as in each case the abbreviation used is standard and sufficiently full for ready recognition. Only such European works have been included as were found useful in preparing the volume.

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